



SUB-COMMITTEE ON
RADIOCOMMUNICATIONS AND SEARCH
AND RESCUE -
4th session
Agenda item 8.1

COMSAR 4/8/4
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**MATTERS CONCERNING SEARCH AND RESCUE INCLUDING
THOSE RELATED TO THE 1979 SAR CONFERENCE
AND THE INTRODUCTION OF THE GMDSS**

**Report of the sixth ICAO/IMO Joint Working Group
on Harmonization of Aeronautical and
Maritime Search and Rescue**

Note by the Secretariat

SUMMARY

- Executive summary:*** The sixth meeting of the ICAO/IMO Joint Working Group on Harmonization of Aeronautical and Maritime Search and Rescue was held in Victoria, B.C. from 5 to 9 October 1998 and its report, including appendices D, F, H, I, K and L requiring consideration or action, is given at the annex. The remaining appendices A, B, C, E, G and J are annexed to document COMSAR 4/INF.2.
- Action to be taken:*** The Sub-Committee is invited to consider the aforementioned report, note its recommendations and take action as appropriate.
- Related documents:*** The IAMSAR Manual.

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ANNEX



SIXTH ICAO/IMO JOINT WORKING GROUP ON SAR (1998)

Victoria, B.C. 5 to 9 October 1998

REPORT OF THE ICAO/IMO JOINT WORKING GROUP ON HARMONIZATION OF
AERONAUTICAL AND MARITIME SEARCH AND RESCUE

0. General

0.1 The sixth meeting of the International Civil Aviation Organization/International Maritime Organization (ICAO/IMO) Joint Working Group (JWG) on Harmonization of Aeronautical and Maritime Search and Rescue (SAR) was held in Victoria, B.C., Canada, from 5 to 9 October 1998. Mr. U. Hallberg (Sweden) was Chairman and Col. Rick Hardy (Canada) was Vice-Chairman. The Chairman welcomed the members, advisors and observers of the Joint Working Group to the meeting and Mr. Ron Miller welcomed the group on behalf of the hosts. The Chairman, on behalf of the JWG, expressed his regrets for the crash of a Canadian armed forces SAR helicopter in which six lives were lost.

0.2 The experts who participated in the JWG/6 meeting are listed at Appendix A*. Egypt, Greece, Turkey, COSPAS-SARSAT, the International Federation of Air Line Pilots Associations (IFALPA) and INMARSAT participated as observers.

0.3 The JWG welcomed and accepted the kind offer by Singapore to host the next meeting of the JWG which would tentatively take place in Singapore during the second half of January 2000.

0.4 The Chairman, on behalf of the JWG, expressed his deep appreciation to the hosts of JWG/6 for the excellent arrangements and the hospitality shown.

1. Agenda Item 1. - Adoption of the Agenda

1.1 The Group adopted the draft agenda at Appendix B*.

*See COMSAR 4/INF.2

2. Agenda Item 2. - Consideration of terms of reference - future work of the Joint Working Group and priorities

2.1 The terms of reference is at Appendix C*. Under Agenda Item two, one paper was presented regarding the development of minimum standards and guidelines relating to operational SAR services. It was suggested that there were grounds for the development of stand alone international standards for rescue co-ordination centres (RCCs) and RCC personnel. These could be prepared by the JWG and would establish international guidelines for the management and operation of RCCs and all areas of a RCC's operational responsibility, to be agreed by ICAO and IMO. The proposal was supported by the JWG and the following recommendation was formulated.

Recommendation 6/1 - Development of minimum standards and guidelines

That, members of the JWG develop proposals relating to minimum standards and guidelines for management and operation of RCCs, to be presented to JWG/7.

3. Agenda Item 3. - Provision of conventions, plans, manuals and other documents affecting SAR

3.1 Further work on the joint Manual – publication, translation, distribution and updating

3.1.1 The JWG noted that during the drafting of the IAMSAR Manual it had been observed that the Manual would need to be easily amended for corrections or updating. That was, *inter alia*, one of the reasons for choosing the loose leaf format for the manual. However, as the amendment proposals had to be submitted to IMO, ICAO and the JWG to be approved by both Organizations, the time required for amendments could become unacceptable. The JWG agreed that there was a need to revise the procedures of IMO so that amendments could be made more rapidly. For that reason it was proposed that:

- a) minor editorial amendments should be proposed by the JWG and decided jointly by the Secretariats of ICAO and IMO;
- b) urgent amendments should be made provisionally by the competent bodies of ICAO and IMO after consultation with the Secretariat of the other Organization, to be confirmed by a “normal amendment”; and
- c) normal amendments should follow the procedure for COMSAR Circulars with a provisional adoption by COMSAR and endorsement by the Maritime Safety Committee (MSC).

3.1.2 It was noted that, while ICAO procedures allowed for a very quick updating of the Manual, the IMO procedures involved a time period of up to two years before an amendment proposed by the JWG could be adopted, and as the IAMSAR Manual was a joint manual, the procedures of IMO dictated the pace at which amendments could be approved. It was further noted that COMSAR Circulars could be published before approval by the MSC. It was proposed that amendments to the IAMSAR Manual could possibly be seen to be at the level of Circulars which would allow for a faster approval process and earlier

*See COMSAR 4/INF.2

publication of essential material. The JWG agreed that, since the manual did not contain international law but guidance material to assist States in implementing an efficient SAR service, the procedures could be detached from those required to change the Convention. Therefore, it was agreed that a proposal be submitted to the MSC that the COMSAR Sub-Committee or a group of experts be authorized to approve amendments to the Manual. To make information immediately available to States it was agreed that amendment proposals should be published, in draft form, on the <http://www.rcc-net.org> website for information. In this context the JWG commended the Canadian Coast Guard for publishing the JWG/6 working papers on the website, which had allowed members of the Group quick access.

Recommendation 6/2 - Expedited approval process for amendments to the IAMSAR

That, the MSC be requested to delegate authority to approve amendments to the IAMSAR Manual to the COMSAR Sub-Committee or to a group of experts.

3.2 Possible alignment of the IMO Area SAR Plans, GMDSS Master Plan and ICAO Regional Air Navigation Plans

3.2.1 Regarding the harmonization of aeronautical and maritime search and rescue region (SRR) boundaries, the JWG was of the opinion that they should be aligned wherever possible. It was noted that there were areas where aeronautical and maritime SRRs overlapped which could lead to confusion with potentially serious consequences through co-ordination problems. However, harmonization of aeronautical and maritime SRRs was not always possible due to political situations. The goal should be to support harmonization in so far as practicable and, in the meanwhile, further co-operation between ARCCs and MRCCs could be a way to improve the situation. The JWG agreed to the following recommendation.

Recommendation 6/3 - Co-operation between MRCCs and ARCCs

That, while maritime and aeronautical SRRs are not always coinciding, aeronautical and maritime rescue co-ordination centres should co-operate and co-ordinate all operations.

3.3 In the 69th session of the MSC, the proposal by the JWG for an amendment to Volume 3 of the IAMSAR Manual concerning use of the distress signal for cases of man overboard incidents, was challenged by the ICS and sent back to the JWG for further discussion. Whilst acknowledging that there was at present some disparity between the old Chapter IX and the new GMDSS Chapter NIX of the ITU Regulations, the JWG agreed that there was a clear case for the use of the distress signal due to; the reference to a “person in distress” in article N3112 of the Radio Regulations; the reference to “persons” in the SAR Convention; and the reference to “person” in Article 98 of the United Nations Convention on the Law of the Sea. It was also recognized that use of the distress signal might not be warranted in all cases and that the classification of an emergency phase in man overboard situations should be left to the discretion of the master/skipper of the vessel concerned and/or the co-ordinating MRCC. Consequently, the JWG agreed to the following recommendation.

Recommendation 6/4 - Man overboard distress message

That, a proposal be re-submitted to the COMSAR Sub-Committee that a man overboard message warrants a distress call and not an urgency call.

3.4 A proposal for an amendment to the COSPAS-SARSAT distress alert message set was presented. It was observed that the proposal was in accordance with present procedures within the COSPAS-SARSAT Organization and that it included position information from e.g. GNSS receivers included in the distress beacons. The JWG was of the opinion that the IAMSAR message set had been developed over a period of three years, based on the requirements of the SAR community, and that the various peculiarities of each type of message had been taken into account. It was the opinion of the JWG that the SAR community should notify the communications providers what information that was needed, not the other way around where communications providers decided what information to provide. It was agreed that procedures should be worked out so that co-ordination between the SAR community and communications providers could be achieved regarding amendments to the IAMSAR Manual. Considering that the samples provided in the IAMSAR Manual, Volume 2, were subject to change, the JWG agreed that Appendix B to Volume 2 be amended.

Recommendation 6/5 - COSPAS-SARSAT distress alert message

That, the COSPAS-SARSAT distress alert message as contained in the IAMSAR Manual, Volume 2, Appendix B, pages B-2 to B-6 be amended as indicated in Appendix D to this report.

3.5 It was noted that at the JWG/5 meeting it had been decided not to include references or sources in the IAMSAR Manual for the reason that it was used for operational purposes. However, the manual was also to be used by people involved in policy making, general improvement of the SAR system and general or specialised studies. Therefore, it was agreed that a list of references should be prepared while the original authors were still available and active in the JWG. The list to be prepared did not necessarily need to be published but could be made available by the respective Organization on request. The members from the United States agreed to prepare these references, in so far as possible, before the next meeting of the JWG.

Recommendation 6/6 - List of references

That, a list of references used in the development of the IAMSAR Manual be prepared by the members from the United States before the next meeting of the JWG.

3.6 A working paper was presented which included the United States' National Search and Rescue Plan – 1999, which was intended to co-ordinate civil search and rescue services to meet domestic needs and international commitments. Implementing guidance for the Plan was provided in the IAMSAR Manual, the National Search and Rescue Supplement and other relevant directives of the Participants to the Plan. It was noted by the JWG that each participant to the plan would fund its own activities in relation to the plan, unless otherwise arranged by the participants in advance, and would not allow a matter of reimbursement of costs to delay response to any person in danger or distress. Arrangements between federal military and civil agencies would provide for the fullest practicable co-operation, consistent with statutory responsibilities and authorities and assigned SAR functions. The group expressed its satisfaction with the United States National SAR Plan and it was decided that it should be included in the report as Appendix E*. It was also agreed that members of the group should submit to JWG/7 their National SAR Plans for discussion regarding their alignment with the principles of the IAMSAR.

*See COMSAR 4/INF.2

Recommendation 6/7 - Submission of SAR Plans

That, members of the JWG submit their National SAR Plans for discussion at the next meeting of the JWG.

3.7 A working paper was presented which included draft amendments to ICAO Annex 12. It was explained that this was not an amendment proposal but should only form the basis for discussions, taking into account the recently adopted changes to the International Convention on Maritime Search and Rescue. It was agreed that a drafting correspondence group be established with the mandate to harmonize Annex 12 with the maritime SAR Convention. In this context it was observed that the need to change Annex 12 should first be established by the drafting group. Col. Rick Hardy would be the Rapporteur while members of the group would include Messrs. Urban Hallberg, Mervin Fernando, David McBrien and Cay-R. Boquist. The JWG asked the drafting correspondence group to submit its proposal to members of the JWG before 1 October 1999.

3.7.1 It was proposed by the observer from Greece that in preparing a revised ICAO Annex 12, attention had to be given to the fact that the Annex of the 1979 Hamburg Convention differed from Annex 12 in several essential points concerning principles, structure and operational procedures, i.e. operational responsibilities for aeronautical SAR are associated with internationally recognized aeronautical SRRs established in accordance with the relevant ICAO provisions and documents in the appropriate ICAO Regional Air Navigation Plans.

3.7.2 The ICAO Secretary explained that the ICAO regional air navigation planning processes did not coincide with some of the wording of the maritime SAR Convention relating to the establishment of SRRs. Therefore, the maritime SAR Convention and ICAO Annex 12 could not be aligned in that area.

Recommendation 6/8 - Annex 12 amendments

That, the Annex 12 drafting correspondence group presents the results of its review to JWG/7, including proposals for amendment as necessary.

3.8 During the discussions relating to Annex 12 and the Maritime SAR Convention, the opinion was voiced that there should be only one SAR Convention covering both ICAO and IMO, and that this Convention could be a United Nations Convention. It was remarked that this would involve a lengthy process and that it was preferred that the alignment of Annex 12 and the Maritime SAR Convention went ahead and that the possibility of a common SAR Convention for ICAO and IMO had to be considered further.

3.8.1 The cost for purchasing the manuals was discussed at length and it was noted that Volume 3 would be widely used by SOLAS ships. Volume 3 would also be used by aircraft involved in SAR even if, in most cases, they would not be carried on board but be used for training and on the ground. As many aircraft used for SAR were provided on a voluntary basis and the cost for equipping all SAR aircraft with Volume 3 could not be absorbed by the SAR authorities, it was suggested that a way should be devised so that the copyright on that volume could be waived. This could not be resolved by the Joint Working Group but had to be brought to the various States' Representatives to ICAO and IMO. Concern was expressed that the Manual would not be distributed to all that needed it when the cost was a factor. Background information on that aspect is provided at Appendix F. It was considered important that all SOLAS ships carried Volume 3 and that, therefore, the carriage should be made mandatory. Consequently, the JWG formulated the following recommendation.

Recommendation 6/9 - Mandatory carriage of IAMSAR Volume 3

That, the IAMSAR Manual, Volume 3, be mandatory for all SOLAS vessels, replacing the existing MERSAR Manual.

3.8.2 Regarding publication of the IAMSAR Manual later in 1998 the group was of the opinion that this had to be advertised to States so that those concerned became aware that new material had become available. This could also involve a press release. It was agreed that the ICAO and IMO Secretaries to the JWG should ensure that information would be included in the respective magazines of the Organizations.

Recommendation 6/10 - Announcing the availability of IAMSAR Manual

That, ICAO and IMO include in their respective magazine, information when the IAMSAR Manual is published and available.

3.9 Regarding information relating to addresses and communications capabilities of MRCCs, it was noted that this could be published by IMO and passed on to ICAO. Also, information on ARCCs could be included in the MSC Circular on the subject. In particular, the communications capabilities of both MRCCs and ARCCs would be of interest to the search and rescue community.

4. Agenda Item 4 - SAR operational principles, procedures and techniques

4.1 A draft amendment proposal to the IAMSAR Manual related to overland search planning for missing aircraft was introduced. In Canadian studies it had been observed that aircraft normally crashed closer to the intended track than was previously believed. Also, the distance from track where most aircraft could be found did not increase with the distance flown but remained the same. The method proposed was easy to follow and was also used by Norway and the United States for overland search. No working group member was aware of any additional studies on the subject. It was agreed that the proposal contained very good material and that it was a good starting point from which provisions could be further developed for inclusion in Volumes 2 and 3 of the IAMSAR Manual. The members from the United States agreed to take the lead in preparing an amendment proposal for the next meeting of the JWG. The proposals by the United States would be distributed before 1 October 1999.

Recommendation 6/11 - Amendment of IAMSAR regarding land SAR

That, the members from the United States further develop the material contained in JWG/6-WP/4, to be presented to JWG/7 as an amendment proposal to the IAMSAR, Volumes 2 and 3.

4.2 A paper relating to plans for co-operation between SAR services and cruise ships as required by SOLAS V 15(c) was presented. It was noted that the SOLAS regulation was a requirement for passenger ships trading on fixed routes and that the plans were required to be developed in co-operation between the ship and the search and rescue services. It was pointed out that not all flag states were applying this regulation to all passenger ships, only ro-ro ferries, and that without clarification regarding the term 'fixed routes' and the subsequent world-wide uniform application of the this regulation there would be a need for special arrangements for cruise ships where States had applied the regulation to this class of passenger ship. For this reason the United Kingdom had designated one of its MRCCs (Falmouth) as a SAR Data Provider (SDP) or a single point of contact for others to get information on any United Kingdom flagged passenger ship wherever it might be. In the discussions that followed it was agreed that this needed to be clarified,

particularly as it was believed that the Panel of Experts had always intended that the regulation should apply to all passenger ships. It was agreed that France should bring this to the attention of COMSAR 4. It was also agreed that JWG/6-WP/7 be presented to COMSAR 4 for information.

Recommendation 6/12 - Cruise ships

That, the JWG member from France bring to COMSAR 4 a request for clarification of fixed routes as relating to cruise ships.

Recommendation 6/12 - Plans for co-operation between SAR services and passenger ships

That, the United Kingdom framework document for cruise ships and similar vessels be brought to COMSAR 4 for information.

4.3 At COMSAR 3, a paper had been submitted comprising a proposal for a circular on “Medical assistance at sea and importance of the role of Telemedical Maritime Advice Centres”. Also submitted was a proposed COMSAR Circular about “Medical assistance at sea and maritime radiocommunications”. COMSAR 3 invited Members to consider the preliminary draft circulars and to submit comments and proposals thereon for consideration by the JWG/6 meeting and advise COMSAR 4. Consequently, a paper was presented which proposed a sole integrated medical assistance system in the form of tele-medical advice centres (TMAC). It was suggested that the MRCCs would still remain key elements of the system as they were in charge of operational decisions. It was discussed whether a similar system was required for the aeronautical area. It was also suggested that the creation of a new organization in the form of TMACs would not be appropriate but reference should instead be made to e.g. “competent medical advisors”. The JWG agreed that the proposed Circular should be amended in light of the discussion and that Mr. Mike Russel would ascertain the need for any aviation input.

4.4 The issue of definitions of medical teams was discussed and it was noted that there were differences in States as to what constituted such units, e.g. paramedics. The JWG agreed that there was a need to carry out a comparison study to ascertain the competency of medical intervention teams. Medical doctors of the French TMAC, in co-operation with foreign colleagues, were to prepare a questionnaire which would allow for comparison between countries. The questionnaire would be distributed to participants of the JWG who would pass it on to people that could provide the responses. TMAC, in co-operation with other medical experts, would analyze replies to establish a comparison which would be presented to JWG/7. The JWG agreed to the proposal and invited the members to give the questionnaire the widest possible distribution.

Recommendation 6/14 - Medical intervention teams

That, a comparison study be carried out on the competency of medical intervention teams with the resulting analysis to be presented to JWG/7.

5. Agenda Item 5 - SAR system administration, organization and implementation methods

5.1 Information was provided regarding Australia’s approach to implementing a fully integrated aviation and maritime RCC. At a strategic level, a single integrated RCC was perceived to provide benefits including a higher profile and a more focused strategic direction for SAR. Therefore, a decision had been taken to amalgamate the activities of three RCCs into a single organization. Stage one was the collocation

and integration at the management level; the second stage was the integration at the RCC supervisor level; and the third stage was a lateral integration at an operative level. The JWG found the Australian approach to be very useful and agreed that it be included in the report as Appendix G*.

5.2 In the IAMSAR Manual it is stated that statistical analysis of programme data is important for documenting the need for a well functioning and efficient SAR system. It is also recommended that a number of specific data should be gathered. Therefore, a paper was presented which included a standard database structure for SAR incident data collection. In the discussion the opinion was voiced that the data field related to "lives saved" and "value of property saved" were subjective and should not be included and that "lives assisted" would be more appropriate. However, it was agreed that the fields should be retained as these data fields also provided a justification for the SAR services and that safeguards could be put in place that would ensure that these data were as objective as possible. The JWG agreed that Part 1, Basic Data, as amended in the discussion, should be presented to COMSAR 4 and formulated the following recommendation.

Recommendation 6/15 - SAR Data Base

That:

- a) Part 1 of the basic data field, as presented at Appendix H, be submitted to COMSAR 4 for approval; and
- b) Part 2 containing amplifying data fields be further developed and presented to JWG/7.

5.3 A paper was introduced which called for a central alerting post (CAP) for States that had not yet ratified the IMO SAR Convention. It was noted that the provisional maritime global SAR plan had been completed and that States that had not ratified the SAR Convention could have other obligations related to SAR such as the SOLAS Convention and Annex 12. The paper included a draft COMSAR Circular wherein the duties of the proposed CAP were listed. An evolution of the CAP was proposed to be transformation into a maritime RCC or RSC subject to a number of conditions. It was agreed that the concept expressed in the paper was suitable, however, the term "CAP" was not agreed but should be "alerting post for SAR". The draft COMSAR Circular, as amended, is at Appendix I.

Recommendation 6/16 - Alerting post for SAR

That, the draft COMSAR Circular presented at Appendix I be presented to COMSAR/4 for approval.

QUALITY AND IMPROVEMENT

5.4 A paper was presented wherein the question of a formal rating of SAR Mission Co-ordinators was raised. It was suggested that the SAR authority should establish the minimum requirement for obtaining such a rating. In the discussions it was suggested that there were three areas, training, qualification and certification. The proposals were supported by the JWG and members were invited to submit papers on the subject to JWG/7. Ms. Annika Wallengren Lejon was to be the focal point with input to be provided by, *inter alia*, Messrs. Rick Hardy and Stein Solberg. The initial proposals are at Appendix J*.

*See COMSAR 4/INF.2

5.5 The question of SAR audits and assessments was raised in a paper and it was noted that, the introduction of a quality concept to SAR services implied that one should continuously evaluate the system and learn from experience. The group noted that the subject was addressed in the IAMSAR Manual, Volume 1, Appendix H, regarding National self-assessment on SAR. The JWG noted the paper and invited members to provide further information to JWG/7, based on JWG/6-WP/26 and Appendix H to Volume 1 of the IAMSAR Manual. Criteria for assessment at a unit level should also be included.

5.6 The subject of reporting on the performance of the SAR system was addressed and it was suggested that this should address the total system. It was noted that Volume 1 of the IAMSAR Manual contained general, generic information on the subject. It was agreed that the proposal as contained in JWG/6-WP/28 should be made less detailed and that it could be further developed. A debriefing report was suggested to be a suitable solution. Lead on the work would be taken by Ms. Annika Wallengren Lejon.

6. Agenda Item 6 - RCC/RSC equipment and facility designations and standards

6.1 No papers were submitted under this Agenda Item. However, the JWG discussed how the internet could be effectively used by RCCs. It was agreed that it could be used for administrative messages while operational use was debatable. Use of the internet for exchange of e-mail messages was also discussed and it was proposed that all RCCs should publish their e-mail addresses. Lt. Col. Roark and Capt. Chan would submit papers on the subject to the next meeting of the JWG.

6.2 Information was provided about the maritime automatic identification system (AIS) which had been adopted by the MSC. AIS operated with transponders transmitting the position of the vessel on VHF and that position would then also be displayed in all participating vessels. It was intended that this system could also be used for collision avoidance. The United Kingdom also had a VHF transponder capability in United Kingdom waters.

7. Agenda Item 7 - SAR communications

7.1 The meeting was informed that a MSC Resolution had been approved which required SOLAS ships to maintain a listening watch on Channel 16 until 1 February 2005.

7.2 Information was provided regarding the replies by Denmark and the United States relating to ICAO State Letter AN 15/12-98/41 which contained proposals for the mandatory carriage of 406 MHz ELTs as well as a query regarding discontinuation of satellite processing of the 121.5 MHz signal. In this context the JWG was informed of other replies to the State letter and that several replies had indicated that it would be appropriate to delay implementation of 406 MHz ELTs to 2005 and the discontinuation of satellite processing of 121.5 MHz signals to 2008. The opinion was expressed that hundreds of thousands of people were flying in these aircraft and the SAR community was concerned as the risks would remain the longer it took to make the change to 406 MHz. Consequently, the Joint Working Group expressed its support for the dates proposed by the ICAO Air Navigation Commission and was of the opinion that mandatory carriage of ELTs operating on 406 MHz (and 121.5 MHz for homing) as well as discontinuation of satellite processing of 121.5 MHz signals should be implemented as soon as possible.

7.2.1 A working paper was submitted in which a plan for implementation of the 406 MHz ELT was discussed, and it was proposed that the time-scale would need to be adjusted for the reason that the equipage of 406 MHz ELTs could possibly not be achieved by 1 January 2002. A generic list of aviation and maritime actions which were considered necessary to achieve implementation of 406 MHz beacons is at Appendix K.

7.2.2 IFALPA presented a working paper wherein it was proposed that the early introduction of 406 MHz ELTs providing location data through e.g. GNSS capability would provide for a more effective search and rescue service. Also, it was remarked that the present system using 121.5 MHz was not sufficient in areas over Africa, Sudan and Saudi Arabia. The meeting was informed by COSPAS-SARSAT that Saudi Arabia had installed two LUTs in Jeddah and that it was anticipated that they would be associated with the COSPAS-SARSAT system shortly. In addition, a LUT was being installed in South Africa, expected to become operational in early 1999.

7.2.3 Information was provided by COSPAS-SARSAT that the low-altitude earth orbit (LEO) SAR satellite system had been in operation since 1982 and that it had assisted in the rescue of over 8 600 persons in distress to the end of 1997. At present the system consisted of six satellites in polar orbit, 35 local user terminals (LUTs) and 21 mission control centres (MCCs) established by 20 participating countries and two Organizations. COSPAS-SARSAT was also in the process of experimenting with a geostationary (GEO) complement to the LEOSAR system with 406 MHz repeaters on board three geostationary satellites (and one spare). A demonstration and evaluation phase was carried out from July 1996 to February 1998 to analyze the performance of the 406 MHz GEOSAR system and demonstrate to SAR services the operational enhancements provided by the GEOSAR real time alerting capability. The JWG noted the information provided.

8. Agenda Item 8 - SAR personnel staffing and training

8.1 A working paper was presented which introduced a GMDSS Coast Station Operators Course (CSOC) (see Appendix L). The broad concept of the course was to shadow the commercial General Operators Certificate where it was appropriate to do so, and to introduce a dimension of training which was more relevant to MRCC/MRSC personnel and the co-ordination of SAR. It was agreed that the material was very useful and that it should be presented to COMSAR 4, as amended in light of the discussions; proposals to be provided by members of the group. The JWG agreed to the following recommendation.

Recommendation 6/17 - Development of a rescue centre Operators Certificate

That, the material presented at Appendix L, updated as necessary, be presented to COMSAR/4 for approval.

8.2 A working paper was presented wherein the training requirements for SAR duty officers/SAR mission co-ordinators in RCCs and RSCs was discussed. Guidance was provided for training from the basic introductory level to the more advanced principles and procedures required for a SMC. While it was recognized that States would have varying standards and requirements for the entry level of SAR personnel into their SAR system, it was believed that a SAR service could provide training to students with no previous experience and that recruitment programmes could be adapted to ensure that the correct level of skills and experience was ensured.

8.2.1 A job analysis for marine SAR controllers had been conducted in Canada and was presented in a working paper to the JWG. It was noted that SAR training had been changing drastically over the last ten years. The training had focused more towards skill development for the persons that must perform the tasks. With the job analysis completed, the development of courses with lesson plans was considered an easy task.

8.2.2 A syllabus for SAR officer (aviation) operational training was presented in which the competency based approach had been used. Training packages consisted of three endorsable components; the qualifications framework; the units of competency; and the assessment guidelines. The JWG considered the three papers which were considered to be complementary and which could form the basis for model courses to be developed. The JWG therefore requested Messrs. John Wynn, Ron Miller and David McBrien to combine the three papers and present a proposal to JWG/7.

8.3 A paper was presented in which a SAR awareness training for merchant ship personnel was described. It was noted that MSC/Circ.864 recommended that SAR seminars and refresher seminars were held for key personnel on board passenger ships and their companies to further the awareness of shipboard emergencies. The JWG noted the benefits of such an initiative and agreed that the development of SAR training for co-operating agencies, companies and Organizations, in co-operation with ILF, should be pursued.

Recommendation 6/18 - Seminars for users of the SAR system

That, a working paper be prepared regarding the usefulness of seminars for users of the SAR system, to be presented to JWG/7.

9. Agenda Item 9 - Any other business

9.1 Information was provided regarding the formation of the International Search and Rescue Society Inc. which would be incorporated as a non-profit organization under Canadian law. The initial funding for the society had been provided and an introductory membership fee of US \$ 10 would be requested when memberships were accepted. The JWG congratulated Canada for the initiative and members of the group were encouraged to join the society.

9.2 A presentation was made on the safety of recreational boating in Canada. It was noted that only 15 per cent of all recreational boaters had any form of training. The present programme was aimed at getting more boaters to get the training and was also attempting to educate boaters regarding boating and alcohol. A boating safety programme involved three components of operator proficiency: skill to operate; knowledge about boating safety; and proper on-the-water attitude. The Canadian Coast Guard in its present programme focused on the knowledge about boating safety in which courses were provided.

9.3 Turkey brought the attention of the Group to the composition and number of members of the Joint Working Group. That issue had also been raised by Greece in MSC/69. The Chairman informed the group that this issue was not on the agenda of the JWG and that it would be discussed at COMSAR 4.

9.4 The JWG noted that, in the Indian Ocean Maritime SAR Conference, a Resolution relating to the establishment of an international SAR fund had been agreed. In the resolution, IMO was invited, in co-operation with the aviation and maritime communities and for the purpose of assisting countries, in particular developing countries, to fulfil their obligations under the SAR and SOLAS Conventions, to consider establishing an International SAR Fund. The JWG was of the opinion that this resolution should again be brought to the attention of the COMSAR Sub-Committee.

10. Agenda Item 10 - Report to ICAO and the COMSAR Sub-Committee

10.1 The JWG agreed that the report be submitted to ICAO and IMO for action.

10.2 Since there was no COMSAR Meeting with a following meeting of the MSC before the next proposed meeting of the Joint Working Group, the IMO Secretariat was invited to bring paragraph 0.3 to the attention of the MSC for the approval of the holding of the next JWG meeting.

APPENDIX D

CHANGE TO IAMSAR COSPAS-SARSAT MESSAGE FORMATS

Examples of COSPAS-SARSAT Formats

Note: Not all variations have been included in the examples but may be developed using the message field table and examples that follow.

MESSAGE CONTENT OF A COSPAS-SARSAT ALERT

| Message Field # | TITLE |
|--------------------|--|
| 45 | MESSAGE TYPE |
| 46 | CURRENT MESSAGE NUMBER |
| 47 | MCC REFERENCE |
| 48 | DETECTION TIME & SPACECRAFT ID |
| 49 | DETECTION FREQUENCY |
| 50 | COUNTRY OF BEACON REGISTRATION |
| 51 | USER CLASS OF BEACON |
| 52 | IDENTIFICATION |
| 53 | EMERGENCY CODE |
| 54 | POSITIONS |
| 54a | RESOLVED POSITION |
| 54b | A POSITION & PROBABILITY |
| 54c | B POSITION & PROBABILITY |
| 54d | ENCODED POSITION AND TIME OF UPDATE |
| 55 | SOURCE OF ENCODED POSITION DATA |
| 56 | NEXT PASS TIMES |
| 56a | NEXT TIME OF VISIBILITY OF RESOLVED POSITION |
| 56b | NEXT TIME OF VISIBILITY A POSITION |
| 56c | NEXT TIME OF VISIBILITY B POSITION |
| 56d | NEXT TIME OF VISIBILITY OF ENCODED POSITION |
| 57 | BEACON HEX ID & HOMING SIGNAL |
| 58 | ACTIVATION TYPE |
| 59 | BEACON NUMBER |
| 60 | OTHER ENCODED INFORMATION |
| 61 | OPERATIONAL INFORMATION |
| 62 | REMARKS |
| 63 | END OF MESSAGE |

**SAMPLE WITH MESSAGE FIELD ANNOTATIONS
(406 MHz Notification of country of beacon registration -NOCR)**

FROM AUMCC
TO RCC AUSTRALIA

(Message
Field #)

| | | |
|--------|-----|---|
| #45 | 1. | DISTRESS COSPAS-SARSAT NOTIFICATION OF COUNTRY OF BEACON REGISTRATION ALERT |
| #46,47 | 2. | MSG NO. 16999 UKMCC REF 12345 |
| #48 | 3. | DETECTED AT 22 FEB 95 1708 UTC BY SARSAT 04 |
| #49 | 4. | DETECTION FREQUENCY 406.0269 MHZ |
| #50 | 5. | COUNTRY OF BEACON REGISTRATION 232/G.BRITAIN |
| #51,52 | 6. | USER CLASS - MARITIME ID MMSI LAST SIX DIGITS 387718 |
| #53 | 7. | EMERGENCY CODE NIL |
| #54 | 8. | POSITIONS |
| #54a | | RESOLVED - NIL |
| #54b | | DOPPLER A - NIL |
| #54c | | DOPPLER B - NIL |
| #54d | | ENCODED - 50 24.0N 005 16.0W UPDATE TIME UNKNOWN |
| #55 | 9. | ENCODED POSITION PROVIDED BY EXTERNAL DEVICE |
| #56 | 10. | NEXT PASS TIMES |
| #56a | | RESOLVED - NIL |
| #56b | | DOPPLER A - NIL |
| #56c | | DOPPLER B - NIL |
| #56d | | ENCODED - NIL |
| #57 | 11. | HEX ID BEEE01D20001401 HOMING SIGNAL 121.5 MHZ |
| #58 | 12. | ACTIVATION TYPE - MANUAL |
| #59 | 13. | BEACON NUMBER ON AIRCRAFT OR VESSEL NO. 7 |
| #60 | 14. | OTHER ENCODED INFORMATION |
| | A. | BEACON MANUFACTURER AND MODEL NUMBER - LITTON/948 |
| #61 | 15. | OPERATIONAL INFORMATION |
| | A. | REGISTRATION INFORMATION AT UKMCC TELEX: 75194 UKMCCK G AFTN: EGQPZSZX TELEPHONE: (44-1343) 836015 |
| | B. | RELIABILITY OF ENCODED POSITION DATA - GOOD |
| #62 | 16. | REMARKS - NIL |
| #63 | | END OF MESSAGE |

SAMPLE 406 MHz RESOLVED POSITION ALERT

(LEOSAR - with encoded position)

FROM AUMCC
TO RCC AUSTRALIA

1. DISTRESS COSPAS-SARSAT POSITION RESOLVED ALERT
2. MSG NO. 17001 UKMCC REF 12345
3. DETECTED AT 22 FEB 95 1915 UTC BY COSPAS 06
4. DETECTION FREQUENCY 406.0269 MHZ
5. COUNTRY OF BEACON REGISTRATION 232/G.BRITAIN
6. USER CLASS - MARITIME ID MMSI LAST SIX DIGITS 387718
7. EMERGENCY CODE - NIL
8. POSITIONS
 - RESOLVED - 55 23.2N 022 29.9W
 - DOPPLER A - 55 19.1N 022 20.4W
 - DOPPLER B -
 - ENCODED - 55 23.2N 022 25.0W UPDATE TIME UNKNOWN
9. ENCODED POSITION PROVIDED BY EXTERNAL DEVICE
10. NEXT PASS TIMES
 - RESOLVED - 22 FEB 95 2130 UTC
 - DOPPLER A - NIL
 - DOPPLER B - NIL
 - ENCODED - NIL
11. HEX ID BEEE01D20001401 HOMING SIGNAL 121.5 MHZ
12. ACTIVATION TYPE - MANUAL
13. BEACON NUMBER ON AIRCRAFT OR VESSEL NO. 7
14. OTHER ENCODED INFORMATION
 - A. BEACON MANUFACTURER AND MODEL NUMBER - LITTON/948
15. OPERATIONAL INFORMATION
 - A. REGISTRATION INFORMATION AT UKMCC
TELEX: 75194 UKMCCK G
AFTN: EGQPZSZX
TELEPHONE: (44-1343) 836015
16. REMARKS - NIL

END OF MESSAGE

SAMPLE 406 MHz CONTINUED TRANSMISSION ALERT

(LEOSAR - with encoded position)

FROM AUMCC
TO RCC AUSTRALIA

1. DISTRESS COSPAS-SARSAT POSITION RESOLVED UPDATE ALERT
 2. MSG NO. 17002 UKMCC REF 12345
 3. DETECTED AT 22 FEB 95 2130 UTC BY COSPAS 06
 4. DETECTION FREQUENCY 406.0269 MHZ
 5. COUNTRY OF BEACON REGISTRATION 232/G.BRITAIN
 6. USER CLASS - MARITIME ID MMSI LAST SIX DIGITS 387718
 7. EMERGENCY CODE - NIL
 8. POSITIONS
 - RESOLVED - 55 23.2N 022 29.9W
 - DOPPLER A - 55 19.1N 022 20.4W
 - DOPPLER B -
 - ENCODED - 55 23.2N 022 25.0W UPDATE TIME UNKNOWN
 9. ENCODED POSITION PROVIDED BY EXTERNAL DEVICE
 10. NEXT PASS TIMES
 - RESOLVED - 22 FEB 95 2201 UTC
 - DOPPLER A - NIL
 - DOPPLER B - NIL
 - ENCODED - NIL
 11. HEX ID BEEE01D20001401 HOMING SIGNAL 121.5 MHZ
 12. ACTIVATION TYPE - MANUAL
 13. BEACON NUMBER ON AIRCRAFT OR VESSEL NO. 7
 14. OTHER ENCODED INFORMATION
 - A. BEACON MANUFACTURER AND MODEL NUMBER - LITTON/948
 - B. ENCODED POSITION ACCURACY - 2 MINUTES
 15. OPERATIONAL INFORMATION
 - A. REGISTRATION INFORMATION AT UKMCC
 - TELEX: 75194 UKMCCK G
 - AFTN: EGQPZSZX
 - TELEPHONE: (44-1343) 836015
 16. REMARKS - NIL
- END OF MESSAGE

SAMPLE 406 MHz POSITION CONFLICT ALERT

(LEOSAR - without encoded position)

FROM AUMCC
TO RCC AUSTRALIA

1. DISTRESS COSPAS-SARSAT POSITION CONFLICT ALERT
2. MSG NO. 17001 UKMCC REF 12345/12346
3. DETECTED AT 22 FEB 95 1738 UTC BY SARSAT 02
4. DETECTION FREQUENCY 406.0269 MHZ
5. COUNTRY OF BEACON REGISTRATION 232/G.BRITAIN
6. USER CLASS - MARITIME ID MMSI LAST SIX DIGITS 387718
7. EMERGENCY CODE - NIL
8. POSITIONS
 - RESOLVED - NIL
 - DOPPLER A - 56 16.1N 001 18.4W PROB 50
 - DOPPLER B - 54 47.9N 019 37.0W PROB 50
 - ENCODED - NIL UPDATE TIME NIL
9. ENCODED POSITION PROVIDED BY: NIL
10. NEXT PASS TIMES
 - RESOLVED - NIL
 - DOPPLER A - 22 FEB 95 1830 UTC
 - DOPPLER B - 22 FEB 95 1831 UTC
 - ENCODED - NIL
11. HEX ID BEEE01D20001401 HOMING SIGNAL 121.5 MHZ
12. ACTIVATION TYPE - MANUAL
13. BEACON NUMBER ON AIRCRAFT OR VESSEL NO. 7
14. OTHER ENCODED INFORMATION
 - A. BEACON MANUFACTURER AND MODEL NUMBER - LITTON/948
15. OPERATIONAL INFORMATION
 - A. REGISTRATION INFORMATION AT UKMCC
TELEX: 75194 UKMCC G
AFTN: EGQPZSZX
TELEPHONE: (44-1343) 836015
 - B. RELIABILITY OF DOPPLER POSITION DATA - SUSPECT
16. REMARKS
THIS POSITION 200 KILOMETRES FROM PREVIOUS ALERT

END OF MESSAGE

SAMPLE 406 MHz Notification of Country of beacon registration (NOCR) ALERT

(LEOSAR - encoded position)

FROM AUMCC
TO RCC AUSTRALIA

1. DISTRESS COSPAS-SARSAT NOTIFICATION OF COUNTRY OF BEACON REGISTRATION ALERT
 2. MSG NO. 16999 UKMCC REF 12345
 3. DETECTED AT 22 FEB 95 1708 UTC BY SARSAT 04
 4. DETECTION FREQUENCY 406.0269 MHZ
 5. COUNTRY OF BEACON REGISTRATION 232/G.BRITAIN
 6. USER CLASS - MARITIME ID MMSI LAST SIX DIGITS 387718
 7. EMERGENCY CODE - NIL
 8. POSITIONS
 - RESOLVED - NIL
 - DOPPLER A - NIL
 - DOPPLER B - NIL
 - ENCODED - 50 24.0N 005 16.0W UPDATE TIME UNKNOWN
 9. ENCODED POSITION PROVIDED BY EXTERNAL DEVICE
 10. NEXT PASS TIMES
 - RESOLVED - NIL
 - DOPPLER A - NIL
 - DOPPLER B - NIL
 - ENCODED - NIL
 11. HEX ID BEEE01D20001401 HOMING SIGNAL 121.5 MHZ
 12. ACTIVATION TYPE - MANUAL
 13. BEACON NUMBER ON AIRCRAFT OR VESSEL NO. 7
 14. OTHER ENCODED INFORMATION
 - A. BEACON MANUFACTURER AND MODEL NUMBER - LITTON/948
 15. OPERATIONAL INFORMATION
 - A. REGISTRATION INFORMATION AT UKMCC
 - TELEX: 75194 UKMCCK G
 - AFTN: EGQPZSZX
 - TELEPHONE: (44-1343) 836015
 - B. RELIABILITY OF ENCODED DATA - GOOD
 16. REMARKS - NIL
- END OF MESSAGE

SAMPLE 406 MHz INITIAL ALERT

(GEOSAR - without encoded position)

FROM AUMCC
TO RCC AUSTRALIA

1. DISTRESS COSPAS-SARSAT INITIAL ALERT
 2. MSG NO. 16998 UKMCC REF 12345
 3. DETECTED AT 22 FEB 95 1708 UTC BY GOES 08
 4. DETECTION FREQUENCY 406.0269 MHZ
 5. COUNTRY OF BEACON REGISTRATION 232/G.BRITAIN
 6. USER CLASS - MARITIME ID MMSI LAST SIX DIGITS 387718
 7. EMERGENCY CODE - NIL
 8. POSITIONS
 - RESOLVED - NIL
 - DOPPLER A - NIL
 - DOPPLER B - NIL
 - ENCODED - NIL
 9. ENCODED POSITION PROVIDED BY EXTERNAL DEVICE
 10. NEXT PASS TIMES
 - RESOLVED - NIL
 - DOPPLER A - NIL
 - DOPPLER B - NIL
 - ENCODED - NIL
 11. HEX ID BEEE01D20001401 HOMING SIGNAL 121.5 MHZ
 12. ACTIVATION TYPE - MANUAL
 13. BEACON NUMBER ON AIRCRAFT OR VESSEL NO. 7
 14. OTHER ENCODED INFORMATION
 - A. BEACON MANUFACTURER AND MODEL NUMBER - LITTON/948
 15. OPERATIONAL INFORMATION
 - A. REGISTRATION INFORMATION AT UKMCC
TELEX: 75194 UKMCCK G
AFTN: EGQPZSZX
TELEPHONE: (44-1343) 836015
 16. REMARKS - NIL
- END OF MESSAGE

SAMPLE 121.5 MHz INITIAL ALERT

FROM AUMCC
TO RCC AUSTRALIA

1. DISTRESS COSPAS-SARSAT INITIAL ALERT
2. MSG NO. 18001 UKMCC REF 40007/40008
3. DETECTED AT 22 FEB 96 1738 UTC BY SARSAT 02
4. DETECTION FREQUENCY 121.5678 MHz
5. NIL
6. NIL
7. NIL
8. POSITIONS
RESOLVED - NIL
DOPPLER A - 56 16.1N 001 18.4W PROB 50
DOPPLER B - 54 47.9N 019 37.0W PROB 50
ENCODED - NIL
9. NIL
10. NEXT PASS TIMES
RESOLVED - NIL
DOPPLER A - 22 FEB 96 1830 UTC
DOPPLER B - 22 FEB 96 1831 UTC
ENCODED - NIL
11. NIL
12. NIL
13. NIL
14. NIL
15. OPERATIONAL INFORMATION
A. DOPPLER TECHNICAL QUALITY - FAIR
16. REMARKS NIL

END OF MESSAGE

APPENDIX F

COST OF THE IAMSAR MANUALS

1. Introduction

1.1 The current philosophy concerning distribution of the IAMSAR Manual is that the material will be copyright protected and provided at substantial cost to customers. This practice contradicts the goal of the Manual as stated in Volume I, paragraph 1.1.3; “The goal of the Manual is to assist State authorities to economically establish effective SAR services, and to promote harmonization of aeronautical and maritime SAR services, and to ensure that persons in distress will be assisted without regard to their locations, nationality, or circumstances.”

2. Discussion

2.1 While the goals of the Manual are humanitarian, the method of its distribution is mercenary and will only act to restrict distribution. Distribution based on a State’s ability to pay acts to hinder coordination, cooperation, and development of an effective SAR system which, in turn, could jeopardize life rather than save it. The very audience the Manual needs most to reach frequently has the least ability to pay for it.

2.2 Additionally, many States rely on volunteer SAR personnel and organizations to accomplish the bulk of their SAR. The use of volunteers allows States an ability to provide SAR for its citizens without the accompanying high training, staffing, equipment, and maintenance costs. To ask these volunteers who frequently form the backbone of a State’s SAR system, frequently at substantial personal cost, to purchase the IAMSAR Manual is unacceptable. Expecting the State to provide them to volunteer organizations that easily number into the tens of thousands throughout the world is likewise untenable.

2.3 It has been mentioned that strict distribution must be maintained in order to guarantee the completeness and purity of the Manual and also giving the distribution organization the ability to provide amendments to those that purchase it. I would argue that providing free and easy access to the Manual will provide much more opportunity to maintain current information. It has also been mentioned that the organizations that publish the Manual must recoup their initial costs for development and translations. To this I would say that in the long run, the benefit of the wider distribution of the Manual and its subsequent affect of improving the SAR system will reap a much higher benefit. We are therefore left with a dilemma. How to ensure widest distribution of this much-needed and very important Manual at the lowest possible cost to the organizations that produce it.

3. Recommendation

3.1 ICAO and IMO should make the IAMSAR Manual available for downloading on their respective internet sites. Those organizations or people desiring or required to have a paper copy of the Manual should only be charged equivalent printing and shipping charges. SAR organizations throughout the world should also be encouraged to place the Manual on their internet sites for more localized download opportunities. State SAR organizations should inform all parties interested in SAR of the availability of the Manual to further enhance distribution.

APPENDIX H

Part 1 - Basic Data Fields

The Incident division concerns the overview of the actions taken the elements in this division are:

SAR CASE (field is binary function, Y/N, default blank) This field exists because RCCs may be using this database to record emergency assistance other than SAR (IAMSAR Draft 4 volume 2, Chapter 7) or other work the RCC is tasked to handle. Generally, it is more efficient to build and use one database than to create a series of databases.

RCC (field is set to the RCC name) i.e. Victoria

INCIDENT NUMBER (field is numeric, 6 digits, system generated) Each incident must be uniquely identified to prevent the duplication of records. Ideally, it should be system generated. It is not recommended to include the year as part of the incident number as the year is recorded separately as part of the record.

START DATE (field is numeric, 8 digits, default current system date, format YYYYMMDD)

START TIME (field is numeric, 4 digits, default current system, format HHMM in UTC) The Start Date and Time is the date and time that the RCC was alerted.

INCIDENT DATE (format as per START DATE, default blank)

INCIDENT TIME (format as per START TIME, default blank) This shall be the earliest time for one of the following events, search object declared distress, the time an electronic beacon was activated or an observer noted the search object in distress.

SMC (field is binary function, Y/N, default blank) This designates that either the RCC was SMC at some point for the SAR incident or was assisting another RCC with the incident.

SMC START DATE (format as per START DATE, default blank)

SMC START TIME (format as per START TIME, default blank)

SMC END DATE (format as per START DATE, default blank)

SMC END TIME (format as per START TIME, default blank) These four fields are only recorded if the RCC assumed SMC or turned over SMC to another responsible authority.

SEARCH OBJECT LATITUDE (format DDMM.MX, default blank)

SEARCH OBJECT LONGITUDE (format DDDMM.MY, default blank) This is the datum point's geographical position where D is the degrees, M is minutes and decimal minutes, X is either N or S and Y is either E or W.

OBJECT FOUND LATITUDE (format DDMM.MX, default blank)

OBJECT FOUND LONGITUDE (format DDMM.MX, default blank) This is the geographical position where the search object was found, where D is the degrees, M is minutes and decimal minutes, X is either N or S and Y is either E or W. This is to remain blank if the search object was never found.

DISTANCE OFFSHORE (field is numeric, 4 digits, default blank) This field is only for maritime incidents expressed in nautical miles.

WHO ALERTED (field is numeric, 1 digit, default blank) This field uses a limited list to categorize who alerted the RCC.

1. Search Object
2. Relayed (when the Search Object cannot directly transmit to the RCC)
3. MCC (COSPAS-SARSAT MCCs are not included in "Relayed")
4. Observer
5. RCC

INCIDENT TYPE (field is numeric, 1 digit, default blank) This field uses a limited list to categorize the type of incident.

1. Distress
2. Precautionary Assistance
3. Hoax (a deliberate false activation of the system intended to misuse resources)
4. False Alert (a distress alert received when no distress situation resulted and no notification of distress should have resulted)
5. Not Found (a distress alert received but not resolved)
6. Medical (Medical evacuation and MEDICO)

Part 1 - Basic Data Fields

Search Object is the division describing the object.

SEARCH OBJECT NAME (field is alphanumeric, 32 characters, default blank) This field combined with the next two fields offers a unique identity for the search object. Name should be either the name of the vessel, family name of the Captain or Commander if it is an aircraft or a vessel with no name or primary person's family name (in the case of a diver, swimmer or driver of a motor vehicle).

SEARCH OBJECT OFFICIAL NUMBER (field is alphanumeric, 16 characters, default blank) Filled if, if available.

SEARCH OBJECT RADIO CALLSIGN (field is alphanumeric, 16 characters, default blank) This is the callsign found on the ITU lists.

NATIONALITY OF SEARCH OBJECT (field is alphanumeric, 32 characters, default blank) Self explanatory.

TYPE OF SEARCH OBJECT (field is numeric, two digits, default blank) This field uses a limited list to generally describe the initial search object.

1. SOLAS Passenger
2. SOLAS Non-passenger
3. Non-SOLAS Passenger
4. Non-SOLAS Non-Passenger
5. Fishing Vessel
6. Pleasure Craft Motor with Accommodation
7. Pleasure Craft Motor without Accommodation
8. Pleasure Craft Sail with Accommodation
9. Pleasure Craft Sail without Accommodation
10. Pleasure Craft Recreation (Air beds, toys etc.)
11. Government Non-military Vessel
12. Military Vessel
13. Submarine
14. Non-powered Aircraft or Balloon
15. Rotary Wing Commercial
16. Rotary Wing General Aviation
17. Rotary Wing Government Non-military
18. Rotary Wing Military
19. Fixed Wing Commercial
20. Fixed Wing General Aviation
21. Fixed Wing Government Non-military
22. Fixed Wing Military
23. Automobile
24. Truck/Lorry
25. Person (diver, swimmer, parachutist, jumper/suicide)

POB (field is numeric, 4 digits, default value 1) The number of persons aboard the search object.

LIVES LOST BEFORE NOTIFICATION (field is numeric, 4 digits, default value blank)
LIVES LOST AFTER NOTIFICATION (field is numeric, 4 digits, default value blank)
LIVES SAVED (field is numeric, 4 digits, default value blank) This field is the number of lives delivered to a place of refuge (i.e., port, aerodrome, hospital, reception facility).

VALUE OF PROPERTY SAVED(field is numeric, 10 digits, default blank) This is the value that is referred to in IAMSAR Draft 4, Volume 1 Sections 5.6.7 and 5.6.10.

Part 1 - Basic Data Fields

SAR Facilities is the division that describes in general terms the facilities used. Specifics would be found under the amplifying data category.

TYPE AND NUMBER (field is alphanumeric, nine characters, format ANNGNNMNN, default is A00G00M00) This is the collective type and number of SAR facilities used, where the letter A is for Aeronautical, M for Maritime, G for Ground. N is for the number of each unit. e.g., A04G00M03 refers to four aeronautical SAR facilities, three maritime and no ground

SORTIES (field is numeric, 4 digits, default is blank) This is the collective number of sorties during the incident.

DATE TASKED (format as per START DATE, default blank)

TIME TASKED (format as per START TIME, default blank) This group is for the date/time that the first SAR facility was tasked. If the SAR facility is on-scene when the incident began then this field is left blank.

DATE ON-SCENE (format as per START DATE, default blank)

TIME ON-SCENE (format as per START TIME, default blank) This group is for the date/time for the first SAR facility to arrive on-scene. If the SAR facility is on-scene when the incident began then this field is left blank.

DATE SEARCH OBJECT FOUND (format as per START DATE, default blank)

TIME SEARCH OBJECT FOUND (format as per START TIME, default blank) If the SAR Facility is on-scene when the incident began then this field is left blank.

DATE SEARCH ENDED (format as per START DATE, default blank)

TIME SEARCH ENDED (format as per START TIME, default blank) Self explanatory.

DATE NORMAL (format as per START DATE, default blank)

TIME NORMAL (format as per START TIME, default blank) The date/time that the last SAR facility returns to the function or location it was in before it was involved in the incident.

FORMAL SEARCH PLAN (field is binary function, Y/N, default blank)

AMOUNT OF AREA SEARCHED (field is numeric, 7 digits, default blank) The calculated total area searched without overlap expressed in square nautical miles.

Part 2 - Amplifying Data Fields - EXAMPLE

N.B.: at time of writing, Publication 306 was not received from the supplier.

WEATHER is the division that describes the weather at the time of the alert. Codes that are used in this division are those published by the WMO, Publication 306, Volume 1.1 Part A. It is important to recognize that the database fields and the operator input screen may not contain identical views. For example, visibility may be observed at greater than 50 nautical miles and recorded in this database as code 99.

Weather does not form part of the basic data fields for two reasons. First, weather may not be a significant factor in every distress case and second, not every field would be recorded in every case.

For the elements of this division, only weather that has caused the incident or a significant deterioration in the weather should be recorded. This division should be repeated and tagged with the date/time when more than one observation is recorded.

DATE WEATHER (format as per START DATE, default blank)

TIME WEATHER (format as per START TIME, default blank)

WIND SPEED

WIND DIRECTION

AIR TEMPERATURE

SEA TEMPERATURE

SEA STATE

SWELL HEIGHT

SEA ICE CONDITIONS

CLOUD COVER

CLOUD CEILING

VISIBILITY

PRECIPITATION

Part 2 - Amplifying Data Fields - EXAMPLE

SAR Facilities information that will amplify the basic data is recorded for each SAR Facility that was used in the incident. Each set of fields will be tagged to the type and name.

SAR FACILITY TYPE (field is alphanumeric, 1 character, format T, default blank) This is a generic description of type where T is A, G or M for Aeronautical, Ground or Maritime.

SAR FACILITY NAME (field is alphanumeric, 32 characters, default blank)

SAR FACILITY RADIO CALLSIGN (field is alphanumeric, 16 characters, default blank) This is the callsign found on the ITU lists.

SAR FACILITY NATIONALITY (field is alphanumeric, 32 characters, default blank)

SAR FACILITY DATE TASKED (format as per START DATE, default blank)

SAR FACILITY TIME TASKED (format as per START TIME, default blank)

SAR FACILITY DATE RESPONDED (format as per START DATE, default blank)

SAR FACILITY TIME RESPONDED (format as per START TIME, default blank)

SAR FACILITY DATE ON-SCENE (format as per START DATE, default blank)

SAR FACILITY TIME ON-SCENE (format as per START TIME, default blank)

SAR FACILITY SORTIES (field is numeric, 4 digits, default is blank) The number of sorties conducted by this SAR facility.

SAR FACILITY DOWN-TIME (field is numeric, 6 digits, format DDHHMM) This records time while assigned to a SAR incident where the SAR facility had to refuel, conduct repairs, trade fresh crew for fatigued crew, or any other reason that the SAR facility was not conducting SAR operations.

NUMBER LIVES RESCUED (field is numeric, 4 digits, default value 0)

NUMBER DECEASED RECOVERED (field is numeric, 4 digits, default value 0)

SAR FACILITY DATE RELEASED (format as per START DATE, default blank)

SAR FACILITY TIME RELEASED (format as per START TIME, default blank)

SAR FACILITY DATE NORMAL (format as per START DATE, default blank)

SAR FACILITY TIME NORMAL (format as per START TIME, default blank)

APPENDIX I

CENTRAL ALERTING POSTS (CAPs)

(Draft COMSAR Circular)

INTRODUCTION

Certain States have ratified the International Convention on Maritime Search and Rescue (SAR Convention). Others have not. However more general obligations in matter of SAR may be found in the United Nations Convention on the Law of the Sea (UNCLOS) and in the Safety Of Life At Sea (SOLAS) Convention (see Attachment A).

Furthermore, even if some States have ratified none of these Conventions, as Search and Rescue is an action to save human life, not a legal institution, there is a general obligation for every State to participate, among its possibilities, in the global SAR effort. But to be efficient, this participation must respect certain standards of the global SAR organization, particularly when co-operating with other States.

The Alerting Post

According to the SAR Convention principles (see Attachment B) some volunteer States only are responsible for a Search and rescue Region (SRR).

It follows that some SRRs include coasts and territorial sea of States different from the one that is responsible for this SRR and which hence operates the Maritime Rescue Co-ordination Centre (MRCC) of this SRR. In most cases, exchanges of information between the MRCC and this (these) foreign State(s) pass always through the same local body: police headquarters or harbourmaster for example. This body so operates as *alerting post* of a special kind as it is the sole correspondent of the MRCC in this foreign country.

Definition of the *alerting post* may be found in the IMOSAR Manual and with very slight differences in the IAMSAR Manual: "Any facility intended to serve as an intermediary between a person reporting an emergency and a rescue co-ordination or rescue sub-centre". A lot of them carry out this function very occasionally. Some others are more sea-oriented. But in general, modes of co-operation between the alerting posts are entirely in the hands of the MRCC which has to give to any person or body which may become occasionally an alerting post some instructions such as phone numbers to call and list of data to gather in case of alert. The situation of alerting posts described in the previous indent is a bit different as having a more important general responsibility for SAR in their country. These have been given the name of "Central Alerting Post" (CAP).

Purpose of the circular

The purpose of the following circular about CAPs is:

- to give guidance to the competent body of the Governments involved, even if this State has not ratified the SAR Convention, because while ratification is strongly recommended, as far as human life is involved, a co-operation without ratification is far better than no co-operation at all;
- to give basic elements to the CAPs for them to carry out an efficient co-operation in SAR matters; and

- to give guidance to the MRCCs involved, for them to advise properly the CAPs in their SRRs.

General remarks

- This circular deals normally only with the maritime SAR organization. However principles are the same in both organizations and these are joint in certain States.
- It must be stressed that, if States involved organize their co-operation by signing an agreement or arrangement, they may adopt in this latter instrument other solutions than those provided in the present circular, as far as provisions jointly adopted respect SAR Convention principles and provisions.
- MRSC (Maritime Rescue Sub-Centre) can be read in place of MRCC when a MRSC exists and has been instructed to have link with a CAP.

Attachment A provides pertinent quotations of UNCLOS and SOLAS Convention.

Attachment B recalls the basic elements of the global SAR organization.

1. DEFINITION:

A Central Alerting Post (CAP) in a given country^y is the sole point of contact for SAR matters between all authorities and SAR facilities of this country and the foreign MRCC of the Search and rescue Region (SRR) in which is included the country of the CAP.

In most case the duties of CAP will be a part-time activity of a public body (police or coastguard headquarters or station, harbourmaster, etc.). But it may be carried out by a private body if instructed to do so by a governmental authority.

A CAP should be permanently manned at least by the way of a duty officer able to be called at home out of working hours.

2. DUTIES OF A CAP

2.1 Permanent preparatory duties

2.1.1 Regarding the other alerting posts of the country.

A CAP should be given task to centralize information about any maritime incident.

It should insure its role of centralisation is clearly known, at least by other public bodies involved in emergency situations and in maritime activities.

^yhis "country" may be either an independent State or a remote part of another State whose main coasts are included in another (or several other) SRR(s).

2.1.2 Regarding the SAR resources of the country.

The CAP should keep a record of any facility able to intervene in a SAR case, with basic data (type, range, speed etc.), status of availability as far as possible, and especially way of alerting it for intervention.

2.1.3 Regarding the MRCC

The CAP should keep and take in account any information and guidelines received from MRCC.

If there is not a sole phone number to be used out of working hours, it has to send to MRCC a list of duty officers' personal phone numbers.

2.2 **Duties about a given SAR case**

2.2.1 Normal situation

As soon as a SAR alert is received by the CAP, this body has:

- to pass this alert to the MRCC with full gathered data about the incident;
- if necessary to receive request from MRCC for gathering more information;
- to receive request from MRCC for operating local SAR facilities, following assessment of the situation by the MRCC;
- to pass immediately this request to the body which has power to operate these facilities with all useful information about the task: object of the task, area, radio frequencies etc.;
- if the facilities have not direct communications link with the MRCC (a direct link is the normal way, which has to be sought), to act as communications relay between these facilities and MRCC;
- to report any new element to the MRCC;
- if necessary (for serious accidents for example) to act as communications relay between the MRCC and any governmental or public authority involved in the State of the CAP.

2.2.2 Special situation

When according to information received by the CAP:

- a SAR case clearly needs no search action but only a rescue intervention for few people at a precise point;
- this point is in the territorial sea of the CAP's State;
- the rescue intervention may be carried out by local facilities without help coming from another country or from ships at sea; and
- the CAP may request immediate intervention of local facilities while informing the MRCC.

It has to be stressed that the three above conditions have to be respected because:

- as soon as there is a search to carry out, it may be a long and difficult operation involving facilities coming from outside;
- a CAP has no power to co-ordinate foreign facilities and vessels at sea.

3. DUTIES OF A MRCC REGARDING A CAP

3.1 Permanent preparatory duties

The MRCC permanently has:

- to give the CAP any useful indications for organizing their co-operation, keeping in mind that this information must be kept very simple, as a CAP is only a part-time non-specialized (and sometimes non-maritime) SAR actor;
- to update all elements regarding transmission of alerts (phone or fax numbers, etc.);
- to advise the CAP as appropriate;
- to propose its participation in the training of staff manning the CAP, if practical.

3.2 Duties during a SAR operation

The MRCC has to keep the CAP informed of last information about the operation.

4. EQUIPMENT OF A CAP

A phone line and a fax line are sufficient as recommended basic equipment. According to local situation, VHF equipment may be considered.

5. DOCUMENTATION OF A CAP

5.1 IMO Documentation

This circular may be the sufficient IMO documentation for a CAP. However it may be useful for it to have a copy of the IMO MERSAR Manual or alternatively of the volume 3 of the IAMSAR Manual.

5.2 MRCC Documentation

The CAP has to keep and update documentation sent by the MRCC regarding their mutual co-operation.

5.3 Domestic documentation

The CAP has to maintain and update any documentation issued by any competent authority, especially instructions regarding ways of alerting local facilities.

6. SAR FACILITIES

According to IMO definitions:

- a SAR facility is “any mobile resource, including designated search and rescue units, used to conduct search and rescue operations”;
- a SAR unit is “a unit composed of trained personnel and provided with equipment suitable for the expeditious conduct of search and rescue operations”.

In many countries there are no dedicated SAR units, except small craft. Practically, the SAR resources that a CAP may call for intervention would be in most cases provided by patrol craft of the Navy or the Police or the Coast Guard and by aircraft of these bodies if any. However any other solution is acceptable if efficient.

7. FURTHER EVOLUTION

An advanced evolution of a CAP may be to be transformed into a Maritime Rescue Sub-Centre (MRSC). Such a transformation is subject to the following conditions:

- a certain number of SAR cases to be treated;
- the ratification of the SAR Convention by the CAP's State;
- a joint wish of the authority of the MRCC and of the authority of the CAP;
- a more important level of equipment, especially communications equipment (see IMO document COMSAR/Circ. 18);
- a more important documentation (see IMO document SAR.7/Circ. 1);
- a level of training of personnel similar to the MRCC training level; and
- a jointly decided delegation given by the MRCC to the new MRSC.

Attachment A

United Nations Convention on the Law of the Sea Article 98, paragraph 2:

“Every coastal State shall promote the establishment, operation and maintenance of an adequate and effective search and rescue service regarding safety on and over the sea and, when circumstances so require, by way of mutual regional arrangements co-operate with neighbouring States for this purpose.”

Safety Of Life At Sea (SOLAS) Convention Regulation V/15

“(a) Each contracting Government undertakes to ensure that any necessary arrangements are made for coast watching and the rescue of persons in distress at sea round its coasts. These arrangements should include the establishment, operation and maintenance of such maritime safety facilities as are deemed practicable and necessary having regard to the density of the seagoing traffic and the navigational dangers and should, so far as possible, afford adequate means of locating and rescuing such persons.

(b) Each contracting Government undertakes to make available information concerning its existing rescue facilities and the plans for changes therein, if any.

Attachment B

BASIC ELEMENTS OF THE GLOBAL SAR ORGANIZATION

1. International instruments

Two international conventions give the framework of the global Search And Rescue organization in the world

- the International Civil Aviation Convention (Chicago, 1944) and especially its Annex XII about SAR (1952) for aircraft accidents over land and sea; and
- the International Search And Rescue Convention (Hamburg, 1979) for any "person in distress at sea".

2. Principles of the SAR organization

1st principle: the seas of the world are divided in "Search and Rescue Regions" (SRR). One volunteer State is responsible for this SRR which may include coast and territorial seas of other States, as far as they have accepted it. There is a strong need to avoid confusion in substance between boundaries of these SRRs (which are purely technical in the aim of rescue human life) and political and legal jurisdiction boundaries at sea.

2nd principle: the obligations of the responsible State are not to provide SAR facilities to intervene in any circumstance in any part of the SRR. These obligations are to operate permanently a Rescue Co-ordination Centre (RCC) (and associated technical equipment as appropriate) in charge of reception and centralisation of all alerts in the SRR and then to co-ordinate SAR operations;

3rd principle: any State (hence including States not responsible of a SRR and even States that have not ratified the SAR Convention) has the obligation to participate to the SAR effort, according to its situation regarding length of coasts, maritime activities etc;

4th principle: operations co-ordinated by MRCCs are carried out by SAR units of its own State, SAR units of any other State able to participate and any ship at sea, which has a legal obligation to participate;

5th principle: States have the obligation to co-operate, particularly by providing SAR resources even when the operation is not co-ordinated by their own MRCC, as soon as it is technically possible; and

6th principle: any expense in SAR operations are sustained by the operator of the facility (government for public vessel and aircraft, shipowner for trade and fishing vessel, pleasure craft operator).

APPENDIX K

List of actions considered necessary by a State to achieve full implementation of/conversion to the 406 MHz Emergency Beacon prior to discontinuation of satellite processing of the 121.5 MHz signal

1. States should assign a body responsible for 406 MHz ELT/EPIRB implementation, usually their Department of Transport or equivalent. A person (or group) should be nominated to project manage this major implementation process.
2. States should consider legislating for the carriage of 406 MHz ELTs (as necessary) on the various types and categories of aircraft (if such legislation does not already exist). i.e. airline, business jet, helicopter, general aviation, leisure craft, and on EPIRBs on fishing vessels and pleasure craft not subject to the provisions of the SOLAS Convention.
3. In the case of the 406 MHz ELT (with 121.5 MHz homing capability) any legislation should lay down the rules for mandatory registration of necessary beacon details.
4. Account must be taken of regional policy.
5. A 406 MHz ELT policy together with an implementation plan should be developed with a panel of experts/representatives drawn from: the Civil Aviation Authority, military, regulatory authorities, manufacturers, airlines, equivalent maritime agencies (such as SAR authorities, maritime safety agencies etc.) and at least annual meetings held in order to steer the project. Personal locator beacons (PLBs) for land use may have to be considered too.
6. Publicity material may need to be produced so as to promote, throughout the aviation industry, the carriage of the new type of ELT. Presentations might have to be given at national meetings associated with flight safety and SAR. Articles could be written for magazines and other publications and may be placed on the Internet. Beacon manufacturers and aviators should be specifically targeted.
7. A national database of registered beacons should be established and maintained.. Rules for coding will need to be devised. Size of the database and size of the maintenance task must also be taken account of.
8. Regulatory authorities must be actively involved in any plan as they will have to deal with manufacturers and users on certification issues and agree suitable ELT equipment and timescales for its implementation.
9. The implementation plan must be monitored by the project person or a committee/group established for the task. Liaison with regulatory authorities, manufacturers, the maritime and aviation community and the media may be necessary to a lesser or greater extent.

APPENDIX L

GMDSS COAST STATION OPERATORS COURSE (CSOC) COURSE CONTENT

Section 1 Radio Wave Characteristics and Propagation

- 1.1 Concept of radio frequency, wavelength and velocity
- 1.2 Relationship between wavelength and aerial height/length
- 1.3 Units of radio frequency, and the frequency spectrum
- 1.4 Propagation mechanisms
- 1.5 Types of modulation
- 1.6 Classes of emission
- 1.7 Simplex & Duplex

Section 2 Concept of Coastguard Operations

- 2.1 Equipment types
- 2.2 Workstations
- 2.3 Log Keeping
- 2.4 Publications
- 2.5 Authority & responsibility for rescue centre communications
- 2.6 Advice to the public
- 2.7 Equipment user manuals & guides
- 2.8 Equipment power delivery

Section 3 RT Communications

- 3.1 Distress
- 3.2 Urgency
- 3.3 Yacht Safety Information Broadcasts
- 3.4 Safety
- 3.5 Routine Communications and Radio Regulations
- 3.6 RT Communications integrity

Section 4 Types of station in the Maritime Mobile Service

Section 5 GMDSS Overview

- 5.1 Origins and implementation
- 5.2 Objective, concept and functions of GMDSS
- 5.3 Application
- 5.4 Sea Areas defined
- 5.5 General equipment types
- 5.6 Equipment requirements by sea area

Section 6 EPIRBs

- 6.1 General overview
- 6.2 The COSPAS/SARSAT system
- 6.3 VHF and INMARSAT EPIRBs

Section 7 NAVTEX

- 7.1 General overview
- 7.2 Ship equipment and message priorities
- 7.3 Message categories
- 7.4 UK NAVTEX system

Section 8 INMARSAT

- 8.1 General overview
- 8.2 Component parts of the system
- 8.3 Variety of communications
- 8.4 System equipment
- 8.5 Enhanced Group Calling

Section 9 SARTs

- 9.1 General overview
- 9.2 Positioning aboard ship
- 9.3 Technical specification
- 9.4 Range of SART beacon signals

Section 10 Portable emergency VHF radios

- 10.1 General requirements
- 10.2 Mandatory channels

Section 11 Digital Selective Calling (DSC)

- 11.1 General overview
- 11.2 DSC Frequencies
- 11.3 UK DSC Shore stations
- 11.4 DSC action by ship and shore stations
- 11.5 Overview of HF DSC

Section 12 Implications of GMDSS for Coastguard

- 12.1 Information gathering
- 12.2 Search Area Planning

- 12.3 Effort Allocation
- 12.4 Search instructions
- 12.5 Probability of detection
- 12.6 Decoding MMSI's, serial Numbers and alert messages

Section 13 Practical use of Coastguard rescue centre communications equipment

Section 14 Telephone Fax & TR calls to ships

- 14.1 Methods of making calls
- 14.2 Charge rates for calls

GMDSS COAST STATION OPERATORS COURSE (CSOC) SYLLABUS AIMS AND OBJECTIVES

SECTION 1 Radio Wave Characteristics And Propagation

1.1 Concept of radio frequency, wavelength and velocity

***Aims;** To explore the basic physical science which underpins the theory of radio waves and propagation.*

Objectives; By the end of the session the participant will be able to;

Discuss accurately with the aid of a handout the concepts of radio wavelength, frequency and velocity.

State correctly from memory the relationship between radio wavelength, frequency and velocity.

1.2 Relationship between wavelength and aerial height/length

***Aims;** To give the participant a basic rule of thumb in understanding how the wavelength of radio signals, affects the optimum length of aerial.*

Objectives; By the end of the session the participant will be able to;

State correctly from memory a rule of thumb calculation which can determine the optimum length of antennae required for a given radio wavelength.

1.3 Units of radio frequency, and the frequency spectrum

***Aims;** To introduce the participant to the SI units used to measure radio frequency, wavelength and velocity, and the correct means of labelling such values.*

Objectives; By the end of the session the participant will be able to;

Quote correctly from memory the SI units used to measure, velocity, frequency and wavelength.

State correctly from memory 3 out of 3 standard multiples of the basic unit of frequency, and the correct labelling for each.

State correctly from memory on every occasion which section of the frequency spectrum a given radio frequency lies.

State correctly from memory the exact frequency band appropriate to VHF marine band radio communications.

Discuss accurately with the aid of a handout 4 out of 4 uses of the ULF, LF, UHF and EHF radio bands.

1.4 Propagation mechanisms

Aims; *To examine the means by which radio waves travel in still air.*

Objectives; By the end of the session the participant will be able to;

Discuss accurately with the aid of a handout the physical form of radio waves.

List correctly from memory, three ways in which radio waves are affected by the atmosphere.

Discuss accurately with the aid of a handout, 3 out of 3 layers of atmosphere which affect radio wave propagation.

List correctly from memory 4 out of 4 types of radio propagation wave, and be able to discuss accurately from memory characteristics of each.

State correctly with reference to a handout, what the terms, skip zone and skip distance, mean.

Discuss accurately with the aid of a handout the meaning of the term “fading” of radio reception.

State correctly from memory how to calculate the radio horizon of any particular antenna.

List correctly from memory 3 out of 3 properties which will affect the propagation of radio waves over a long distance.

Discuss accurately from memory 3 out of 3 properties which will affect the propagation of VHF radio waves.

Discuss accurately with reference to a handout 5 out of 10 rules of thumb pertaining to HF range of propagation.

1.5 Types of modulation

Aims; *To introduce the participant to the concepts of amplitude and frequency modulation, carrier and bandwidth.*

Objectives; By the end of the session the participant will be able to;

Discuss accurately from memory the meaning of the term modulation.

State correctly from memory the two main forms of modulation used in RT communications and state correctly which applies to VHF radio and which to MF radio.

Discuss accurately with reference to a handout the characteristics of amplitude modulation.

Discuss accurately with reference to a handout the characteristics of frequency modulation.

Discuss accurately with reference to a handout the terms bandwidth, and carrier frequency.

1.6 Classes of emission

Aims; *To introduce the participant to the ITU classifications of emission, and examine those of particular relevance to marine RT communications.*

Objectives; By the end of the session the participant will be able to;

Discuss accurately with the aid of a handout the method of designating class of emission used by the ITU.

State correctly from memory the three letter acronym designating class of emission used with 2182 voice communications, and discuss accurately from memory the meaning.

State correctly from memory the three letter acronym designating class of emission for use in the MF band working frequencies, and discuss accurately from memory the meaning.

State correctly from memory the three letter acronym designating class of emission for use in VHF RT communications and discuss accurately from memory the meaning.

1.7 Simplex & duplex

Aims; *To introduce the participant to the basic concept of simplex and duplex RT communications.*

Objectives; By the end of the session the participant will be able to;

Discuss accurately with the aid of a handout the characteristics of simplex communications.

Discuss accurately with the aid of a handout the characteristics of duplex communications.

State correctly from memory which system is used with VHF radio communications and which with MF radio communications.

SECTION 2 Concept Of Coastguard Operations

2.1 Equipment types

Aim; *To introduce participants to the types of communications equipment operated by HMCG.*

Objective; By the end of the session participants will be able to name from correctly from memory 5 out of 5 types of Coastguard radio communications equipment used in operations rooms.

2.2 Workstations

Aim; *To raise the awareness of participants as to the correct procedure of handing over a channel 16 watch, and associated equipment checks to make.*

Objective; By the end of the session participants will be able to list correctly from memory 8 out of 10 key considerations in terms of continuity of watchkeeping and equipment checks for the operators attention when taking over the VHF Channel 16 watch.

2.3 Log keeping

***Aim;** To ensure all participants understand and are in a position to apply the correct log keeping procedure at radio watch keeping workstations.*

Objective; By the end of the session the participant will be able to discuss accurately from memory, 9 out of 10 points for consideration when maintaining a distress watch radio log.

2.4 Publications

***Aim;** To raise the awareness of participants to written procedural support material held as standard issue at HMCG rescue centres.*

Objectives; By the end of the session participants will be able to;

List correctly from memory 5 out of 5 publications held as standard issue at MRCC/SC's

State accurately on 7 out of 10 occasions, in which publication to find particular details relating to maritime communications.

2.5 Authority and responsibility for MRCC/SC communications

***Aim;** To ensure participants understand levels of authority and responsibility involved in operating HMCG communications equipment and the responsibility for local training and development..*

Objectives; By the end of the session participants will be able to;

Discuss accurately and from memory by whose authority HMCG communications equipment is operated.

Discuss accurately and from memory who is responsible for proper operation and use of HMCG communications equipment.

Discuss accurately and from memory who is responsible for ensuring proper training of Staff in the operation and use of HMCG communications equipment.

2.6 Advice to the Public

***Aims;** To raise awareness amongst participants as to HMCG policy on giving advice to members of the public regarding fitting and usage of communications equipment.*

Objectives; By the end of the session participants will be able to;

State correctly from memory where to find guidance on official advice as to GMDSS equipment carriage on leisure vessels, dependant upon their areas of operation.

List accurately from memory 5 reasons why cellular telephone equipment is not the preferred choice for communications equipment at sea.

2.7 Equipment user manuals & guides

***Aims;** To remind participants of the importance of maintaining user manuals and guides in good condition and their shared availability between all members of rescue centre personnel.*

Objectives; By the end of the session the participant will be able to;

Identify accurately with the aid of notes all user manuals available to support equipment currently fitted on site.

State from memory where these manuals are located, or make a verbal report as to how he/she arranged for these manuals to be stored and made available.

2.8 Equipment power delivery

***Aims;** To raise the awareness of participants of his/her rescue centre provisions for backup power supplies and standby batteries.*

Objectives; By the end of the session the participant will be able to;

Produce satisfactory written evidence to prove study in this area of work.

Describe accurately, with the aid of study notes the provision for standby generator power at his/her site. Such description will include automatic cut in delay, manual starting technique, type of fuel and provision for refuel.

Describe accurately, with the aid of study notes the provision for standby battery support for key equipment on site. Such description will include the nominal battery life expectancy during prolonged power outage, location and maintenance provision, and identification of electrical appliances supported by battery.

SECTION 3 RT Communications

3.1 Distress

***Aims;** To revise correct procedure for all communications relating to Distress situations.*

Objectives; By the end of the session the participant will be able to;

State correctly from memory under what circumstances a vessel is permitted to use the distress call.

State correctly from memory the meaning of the terms, distress signal, distress call and distress message.

Demonstrate from memory complete and accurate understanding of the correct format and content of a standard distress message.

Demonstrate from memory accurate understanding of the correct format for a distress acknowledgement.

Discuss accurately from memory the correct timing of a distress acknowledgement given differing situations.

Demonstrate from memory complete and accurate understanding of the correct format and content of a distress relay message, given different sets of circumstances – Distress by RT, Distress by means other than RT, and Distress alert by EPIRB.

State correctly from memory 2 out of 2 formats allowed for position information in a distress relay message.

Discuss accurately from memory when the messages seelonce distress and seelonce mayday would be used.

Discuss accurately from memory the correct procedure for terminating a distress situation.

Discuss accurately from memory the correct procedure for lifting silence, but maintaining caution on an RT frequency.

State correctly from memory the timing of MF RT silence periods.

Discuss accurately from memory 2 out of 2 reasons for observing silence periods on MF RT distress channels.

State the correct proword which should precede every communication related to a distress incident.

3.2 Urgency

Aims; *To enable the participant to revise RT communications procedure relevant to Urgency situations.*

Objectives; By the end of the session the participant will be able to;

State correctly from memory the circumstances in which a vessel is permitted to use the Urgency signal.

State correctly from memory the meaning of the terms Urgency signal, Urgency call and Urgency message.

Demonstrate from memory an accurate knowledge of the correct format for a standard Urgency message from a vessel.

Demonstrate from memory an accurate knowledge of the correct format for an Urgency acknowledgement message.

Demonstrate from memory an accurate knowledge of the correct format for a standard Urgency relay message.

State correctly from memory when an Urgency relay message for a red flare report will normally become a Distress relay.

State correctly from memory the type of message you would expect to receive from a vessel who has sighted a red flare from an unknown source.

State correctly from memory the type of relay message which would be made for a medical situation on board ship, and how the call may differ in cases of alert from a ship.

3.3 Yacht safety information (YSI) broadcasts

Aims; *To revise the format and procedure relevant to the uncertainty phase of SAR operations.*

Objectives; By the end of the session the participant will be able to;

State correctly from memory the meaning of the term uncertainty phase and the associated key word(s).

Demonstrate correctly from memory how the YSI broadcast should be announced.

Demonstrate correctly from memory a professional and efficient format for the YSI broadcast.

State correctly from memory the frequencies/channels which should be used to announce and broadcast a yacht safety information broadcast.

State a practical solution which can be utilised to adapt the YSI broadcast in the case of a motor cruiser overdue.

State correctly from memory how a YSI broadcast is repeated.

State correctly from memory what action should be taken having broadcast a YSI twice, but no positive information is forthcoming.

Demonstrate accurately from memory how a YSI broadcast should be cancelled.

Demonstrate accurately from memory how the format of a YSI broadcast would differ if the purpose was to make urgent contact with a craft on behalf of Police.

3.4 Safety

Aims; *To revise the format and procedure relevant to Safety communications and broadcasts.*

Objectives; By the end of the session the participants will be able to;

State correctly from memory the meaning of the term Safety signal.

State correctly from memory what is the correct usage of the Safety signal and message.

State correctly from memory in what circumstances HMCG should make a local navigation warning.

State correctly from memory under what circumstances broadcasts warning of drifting hazards should be repeated.

State correctly from memory the frequency with which warnings relating to navigation buoys off station should be repeated.

State correctly from memory the frequency with which warnings relating to defective or extinguished navigation lights should be repeated.

State correctly from memory what frequencies and medium should be used for safety broadcasts, both in terms of RT, Satellite and DSC communications.

Demonstrate from memory a satisfactory format for safety broadcasts which closely resembles those for Distress and Urgency situations and which indicates an efficient and professional approach.

3.5 Routine Communications and Radio regulations

Aims; *To revise well established CG and ITU routine radio procedure and clarify some of the more important basic international radio regulations.*

Objectives; By the end of the session the participant will be able to;

Describe accurately from memory and demonstrate competent use of the RSVP principles during RT communications.

Demonstrate from memory the use of 10 out of 15 commonly used prowords, in the correct format and context.

Discuss accurately from memory why silence periods are adopted on MF RT.

State correctly from memory what the silence periods on MF RT distress frequency are.

State correctly from memory the maximum length of an RT transmission on the distress frequencies.

State correctly from memory the maximum length of an RT test transmission on the distress frequencies, and state correctly from memory 1 item of information which must be included in this transmission.

Describe accurately from memory the full call, abbreviated call and call serving as address, procedures as they apply to RT transmissions.

List correctly and be able to describe accurately from memory 4 out of 4 responses to a radio check which indicates the signal strength.

List correctly and be able to describe accurately from memory 4 out of 4 responses to a radio check which indicates the readability of the modulated signal.

State correctly from memory the appropriate time zone used to identify all radio transmissions and log entries.

State correctly from memory what frequencies vessels must monitor continuously, and one other frequency which should be monitored until the full implementation of GMDSS in 1999.

State correctly from memory what frequencies vessels must monitor continuously after full implementation of GMDSS in 1999.

Describe accurately from memory the procedure to be adopted when a calling station has difficulty in raising another station.

State correctly from memory who is designated as the controlling station during communications between a ship and shore station.

Describe accurately from memory the action to be taken when station hears a call, but is not certain that the call was intended for it.

Discuss accurately from memory the content of radio regulations in respect of radio secrecy.

Discuss accurately with the aid of study notes, guidelines designed to help avoid radio interference.

Discuss accurately with the aid of study notes, guidelines designed to regulate preliminary radio operations.

List correctly from memory 6 out of 6 VHF channels HMCG is licensed to operate.

List correctly with the aid of a handout 9 out of 9 MF frequencies HMCG is licensed to operate.

List correctly from memory 2 primary and 2 secondary MF/HF frequencies HMCG may operate with permission of RCC during combined SAR operations.

List correctly with the aid of a handout 10 out of 10 VHF channels and 4 out of 4 MF frequencies HMCG is entitled to intervene on during SAR operations.

3.6 RT communications integrity

Aim; *To revise the role of HMCG in policing the integrity of distress and working frequencies of RT communications.*

Objectives; By the end of the session the participant will be able to;

Discuss accurately from memory the responsibility of HMCG in relation to misuse of RT radio frequencies.

Discuss accurately from memory the HMCG guidelines as to when action should be taken against a rogue RT station.

State correctly from memory where guidelines as to appropriate warning messages to stations misusing RT can be located, and where you would find the appropriate report form should further action be required.

SECTION 4 Types of station in the Maritime mobile service

***Aims;** To determine working definitions for different types of operating station within the maritime communications system.*

Objectives; By the end of the session the participants will be able to;

Define accurately from memory the terms Station, ship and traffic as they are applied to marine communications.

List correctly from memory 5 out of 6 stations with which a ship is permitted to communicate directly by radio telephone.

List correctly from memory two facilities provided by a coast station.

List correctly with the aid of a handout, 3 out of 3 facilities by which a vessel can achieve commercial communications via a coast station.

List correctly from memory three categories of coast radio station in terms of distance from the station.

Define accurately from memory the term "Pilot station".

Define accurately from memory the term "Port station"

Define accurately from memory the term "Aircraft station".

Define accurately from memory the term "MRCC".

SECTION 5 GMDSS Overview

5.1 Origins and implementation

***Aim;** To ensure the participants gain a knowledge of how the GMDSS developed, and an overview of previous legislation governing maritime communications.*

Objectives; By the end of the session the participant will be able to;

State correctly from memory the organisations responsible for the administration of GMDSS, both international and UK domestic.

State correctly from memory the international agreement which enables GMDSS, and state correctly from memory the UK legislation which has ratified the system within UK law.

State correctly from memory, two out of three types of equipment on which previous communications legislation was based.

Discuss accurately from memory four relevant disadvantages of previous communications legislation.

5.2 Objective, concept and functions of GMDSS

Aim; *To consider and discuss the concept, objectives and function of the GMDSS system.*

Objectives; By the end of the session the participant will be able to;

State correctly from memory two out of three main objectives desired of the GMDSS system.

List correctly, with the aid of a mnemonic if necessary, nine out of nine functions of the GMDSS.

5.3 Application

Aim; *To consider what vessels must comply with GMDSS regulations and what provision there is for exemption from compliance, and by what dates various types of vessel must comply. The rolling programme of GMDSS introduction will be covered.*

Objectives; By the end of the session the participant will be able to;

Decide correctly on every occasion, given the size, type, nature of passage and means of propulsion of any vessel, whether that vessel must comply with GMDSS legislation or not.

List correctly from memory 3 out of 6 official exemptions from GMDSS legislation.

List correctly with the aid of a handout all significant dates in the rolling programme of GMDSS introduction.

5.4 Sea areas defined

Aim; *To examine the designation of sea areas as laid down in GMDSS legislation compared both to the world's coastline and to the declarations of particular Governments.*

Objectives; By the end of the session the participant will be able to;

Define correctly on every occasion from memory 4 out of 4 sea area designations under GMDSS regulations.

Decide correctly on every occasion from memory, given the Lat & long of a position and/or (as appropriate) the distance from the shore, which GMDSS sea area a position would fall into.

State correctly from memory how to validate the answers above in terms of declarations by a particular Government.

State correctly from memory, which sea area(s) the UK SRR falls into.

Discuss from memory relevant points which will affect the future of the UK Governments sea area designation.

5.5 General equipment types

Aim; *To develop an overview of the types of ships equipment and system which make up the GMDSS system*

Objective; By the end of the session the participant will be able to list from memory 9 out of 9 systems of communications equipment which contribute to the GMDSS system.

5.6 Equipment requirements by sea area

Aim; *To develop and understanding of the GMDSS requirements for ships equipment dependant upon sea area of navigation.*

Objective; By the end of the session the participant will be able to;

Correctly list from memory 8 out of 8 types of communications equipment which must be carried in GMDSS sea area A1.

Correctly list from memory all equipment's in addition to those for sea area A1, which must be carried in sea area A2.

Correctly list from memory all equipment's in addition to those for sea areas A1 and A2, which must be carried by a ship navigating sea area A3.

Correctly list from memory all equipment's in addition to those for sea areas A1, A2 and A3, which must be carried by a ship navigating sea area A4.

SECTION 6 EPIRBs

6.1 General overview

Aims; *To investigate all the EPIRB systems available to the mariner and to discuss which are acceptable under GMDSS. The session will identify which of the beacons is considered acceptable equipment for each of the four GMDSS sea areas.*

Objectives; By the end of the session the participant will be able to;

List correctly from memory 6 out of 6 types of EPIRB available to the mariner.

State correctly from memory which 3 of 6 types of EPIRB are acceptable under GMDSS regulations.

State correctly on every occasion which type of EPIRB is acceptable to any given sea area in the GMDSS system.

Discuss accurately, with the aid of handouts where necessary, basic characteristics of three types of EPIRB not acceptable to GMDSS, and where each might be used.

6.2 The COSPAS/SARSAT system

Aims; *To examine in details the COSPAS/SARSAT satellite system, revealing the more important characteristics and component parts.*

Objectives; By the end of the session the participant will be able to;

Describe accurately, with the aid of a handout the origins of the COSPAS/SARSAT system, and be able to discuss those countries involved.

Describe accurately, with the aid of a handout, 6 out of 9 characteristics of both American and Russian satellites in the COSPAS/SARSAT system.

List correctly from memory 4 out of 4 component offices which together make up the ground processing of COSPAS/SARSAT maritime distress alerting messages.

Discuss with the aid of a handout, the system of routing of COSPAS/SARSAT distress alert messages on a global basis.

Discuss accurately with the aid of a handout the meaning of Doppler effect and how it applies to the COSPAS/SARSAT system.

State correctly from memory, the position errors to be applied to both 406MHz and 121.5MHz beacon derived distress positions.

List correctly with the aid of a handout, two other important characteristics of both 406 and 121.5 EPIRB's.

Accurately compare and contrast from memory the global and real-time modes of operation in the COSPAS/SARSAT system.

Discuss accurately from memory the meaning of the term Merged solution in terms of COSPAS/SARSAT system distress alerts, and discuss how this affects information on a distress alert message.

Describe with the aid of a handout, in very basic terms the area of the earth where the global mode of COSPAS/SARSAT operation cannot be achieved.

Demonstrate accurately on every occasion, analysis of COSPAS/SARSAT system distress alert messages.

Describe accurately from memory the differences between GEOSAR and LEOSAR EPIRB systems.

6.3 VHF and INMARSAT EPIRB's

***Aims;** To develop understanding of characteristics of both VHF and INMARSAT EPIRB's used in the GMDSS system.*

Objectives; By the end of the session participants will be able to;

With the aid of a handout, accurately describe the pertinent details of both the VHF and INMARSAT EPIRB systems.

SECTION 7 NAVTEX

7.1 General overview

***Aims;** To examine in detail the concept and role of the NAVTEX system within GMDSS.*

Objectives; By the end of the session the participant will be able to;

State correctly from memory 2 out of 2 main functions of the Navtex system.

State correctly from memory the voice communications frequency associated with Navtex.

State correctly with the aid of a handout the alternative frequency which will be made available for foreign language broadcasts after February 1999.

List correctly from memory 6 out of 9 main system specifications for Navtex as laid down in the GMDSS regulations.

With reference to a handout, describe accurately the structure of the Navtex system.

7.2 Ship equipment and message priorities

***Aims;** To examine the role of ship Navtex equipment and identify it as receive only equipment, and to identify levels of priority for message handling in the Navtex service.*

Objectives; By the end of the session the participant will be able to;

State correctly from memory the capabilities of ship Navtex equipment in terms of transmission and reception.

State correctly from memory 3 out of 3 message priorities which can be assigned by coast stations.

7.3 Message categories

Aim; *To examine the various categories of message relevant to the Navtex system.*

Objectives; By the end of the session the participant will be able to;

With reference to a handout, list correctly the 17 message categories of the Navtex system.

State correctly from memory 3 out of 3 message categories when cannot be de-programmed from ship equipment.

7.4 UK Navtex system

Aims; *To examine the UK Navtex broadcast system in detail, and gain an understanding of how HMCG can achieve a broadcast by this means.*

Objectives; By the end of the session the participant will be able to;

State correctly from memory, which area of the WWNWS the UK SRR falls into.

State correctly from memory the nominal range of Navtex signals, and state correctly from memory the likely maximum range of signals, and state correctly from memory the designated range of UK Navtex broadcasts.

List correctly from memory 3 out of 3 UK Navtex broadcast remote aerial sites, and state correctly from memory where the UK Navtex system is controlled from.

SECTION 8 INMARSAT

8.1 General overview

Aims; *To investigate the background and characteristics of the INMARSAT system.*

Objectives; By the end of the session the participant will be able to;

State correctly from memory how many satellites are involved in the INMARSAT system.

State correctly from memory the orbit characteristics of INMARSAT satellites.

With the aid of a handout discuss, briefly but accurately the history of the INMARSAT system.

State correctly from memory what the acronym INMARSAT stands for.

List correctly from memory the four ocean areas for INMARSAT operations, and state correctly from memory which ocean areas are applicable to the UK SRR.

State correctly from memory what the nominal coverage of INMARSAT system is, as designated under GMDSS, and state correctly from memory the coverage which has been achieved in practise.

With the aid of a handout list correctly 4 out of 4 radio frequencies utilised by the INMARSAT system, and with the aid of a handout, state correctly the purpose of each frequency.

8.2 Component parts of the system

Aims; *To examine the component parts of the INMARSAT data routing system, and the role played by each part.*

Objectives; By the end of the session the participant will be able to;

List correctly from memory, the 4 out of 4 contributing parts of the INMARSAT data routing system.

State correctly from memory the meaning of the acronyms; SES, MES, CES, LES and NCS.

Discuss accurately from memory the provision for CES/LES throughout the world.

State correctly from memory the location of INMARSAT HQ.

Discuss accurately from memory the role of the NCS, and state accurately from memory the location of the UK CES.

8.3 Variety of communications

Aims; *To discuss the types of communication method and types of message which can be processed using the INMARSAT system.*

Objectives; By the end of the session the participant will be able to;

List correctly from memory four types of communication method provided for by the INMARSAT system.

List correctly from memory four categories of message which can be processed using the INMARSAT system.

8.4 System equipment

Aims; *To examine the various standards of equipment available now and proposed for the future by the INMARSAT organization. Such examination will categorise each system as GMDSS acceptable or not and which types of communications are achievable through each system.*

Objectives; By the end of the session the participant will be able to;

List correctly from memory 6 out of 6 INMARSAT systems, and 1 out of 1 sub-system currently available or planned for the future.

Distinguish correctly from memory between the two acronyms ADE and BDE.

List correctly from memory 5 out of 5 types of communications available through INMARSAT – A.

List correctly from memory 5 out of 5 types of communications available through INMARSAT – B.

List correctly from memory 4 out of 4 types of communications available through INMARSAT – C

List correctly with the aid of a handout, all the types of communications available through INMARSAT – E, M and P.

Discuss accurately from memory why INMARSAT – M is, so far, not acceptable equipment under GMDSS.

State correctly from memory how distress messages can be processed using INMARSAT – A, B and C.

8.5 Enhanced Group calling

Aims; *To examine the purpose and usage of the INMARSAT Enhanced group calling system.*

Objectives; By the end of the session the participant will be able to;

State correctly from memory the correct meaning of the acronym EGC.

Discuss accurately from memory the concept of the EGC system.

State correctly from memory the two subsystems which operate within the EGC system.

Discuss accurately from memory the purpose of both Safetynet and fleetnet.

List correctly from memory 5 out of 5 types of message handled by the Safetynet system.

List correctly from memory 7 out of 7 ways of addressing an EGC message.

State correctly with reference to a handout where necessary the meaning of the term information provider.

SECTION 9 SART

9.1 General overview

Aims; *To examine the concept and purpose of the SART beacon, the frequency band of operations, the equipment required to detect SART signals and the nature of such signals as they appear on a radar screen.*

Objectives; By the end of the session the participant will be able to;

State correctly from memory what the primary purpose of the SART beacon is.

State correctly from memory what type of radar is required to detect SART signals.

State correctly from memory the recommended choice of radar range setting in order to detect SART signals.

Describe accurately from memory the radar image expected from a SART beacon from first detection to that experienced when well within 1nm from the beacon.

State correctly from memory how a survivor in the presence of an operating SART beacon would know the beacon was being interrogated by approaching radar.

9.2 Positioning aboard ship

Aims; *To describe how many SART's must be carried and where they may be located on board GMDSS vessels.*

Objectives; By the end of the session the participant will be able to;

State correctly from memory, how many SART beacons must be carried by vessels of less than 500grt, vessels greater than 500grt and passenger vessels.

List correctly from memory 3 out of 3 choices a ship owner has regarding the location of SART beacons carried on board his/her vessel.

9.3 Technical specification

Aims; *To determine and understand the specifications of a SART beacon as designated by GMDSS regulations.*

Objectives; By the end of the session the participant will be able to;

State correctly from memory the frequency band designated for SART transmissions.

State correctly from memory the required minimum operating life of SART batteries, including standby and operation time.

State correctly with the aid of a handout, the operating temperature range for a SART beacon.

9.4 Range of SART beacon signals

Aims; *To explore the issue of detection range for SART beacons both from theoretical specification and practical application.*

Objectives; By the end of the session the participant will be able to;

State correctly from memory the IMO specified performance criteria relating to the range of detection of SART signals.

State correctly from memory 2 out of 2 examples of SART signal detection range as experienced by surface and airborne SAR units.

State correctly from memory which declared facility has no capability to detect SART beacons.

Discuss accurately from memory, and with reference to 3 out of 5 guidelines factors which may affect the detection range of SART beacons.

SECTION 10 Emergency portable VHF radios

10.1 General requirements

***Aims;** To explore the requirements under GMDSS for the carriage of emergency portable VHF radio units.*

Objectives; By the end of the session the participant will be able to;

State correctly from memory the number of such radios required of vessels of differing size.

State correctly from memory where the radios should be stowed on board.

State correctly from memory what additional provision must be made if the radios are to be used in conjunction with the day to day business of the vessel.

Discuss accurately from memory the purpose of requiring these radios on board ship.

10.2 Mandatory channels

***Aims;** To introduce the participants to the VHF channels which are mandatory under GMDSS legislation's and the purposes of each.*

Objectives; By the end of the session the participant will be able to;

List correctly from memory 3 out of 3 VHF radio channels mandatory under GMDSS legislation.

Discuss accurately from memory the correct designation of VHF channels 16, 06 and 13.

SECTION 11 Digital selective calling

11.1 General overview

Aims; *To explore fully the characteristics and principles of the Digital selective calling system.*

Objectives; By the end of the session the participant will be able to;

List correctly from memory in which sea areas DSC is relevant.

Describe accurately with the aid of a handout, basic technical details of the DSC system, including the time to transmit a DSC alert on MF and VHF.

State accurately from memory the term used to describe the error check function of the DSC system and with the aid of a handout discuss how this works.

Describe accurately from memory, the frequency and number of distress alerts transmitted by ships equipment.

State correctly from memory the options available when addressing a DSC message.

Discuss accurately from memory a potential difficulty in terms of range of communications when operating digital DSC equipment and the subsequent analogue RT equipment.

Discuss accurately from memory the meaning of the terms designated and undesignated DSC distress alerts.

Demonstrate from memory, correct analysis of a DSC distress alert message on 15 out of 18 occasions.

Discuss accurately from memory possible implications in terms of accuracy and time, potential implications of distress alert messages generated by DSC equipment where navigation information is input manually.

Accurately from memory distinguish, on every occasion, between MMSI numbers for ship stations, shore stations, and fleets of ship stations.

State correctly from memory three out of three sources of information to enable the decoding of MMSI's.

11.2 DSC Frequencies

Aims; *To determine the frequencies in use with the VHF, HF and MF DSC system, and the procedure for subsequent RT communications.*

Objectives; By the end of the session the participant will be able to;

List accurately from memory the frequency of MF DSC, the channel appropriate for VHF DSC, and in each case the associated RT frequency and channel.

List accurately with the aid of a handout the 5 frequencies of HF DSC and in each case the associated RT frequencies.

11.3 UK DSC Shore stations

Aims; *To examine the configuration of DSC shore stations in the UK.*

Objectives; By the end of the session the participant will be able to;

List correctly from memory the MRCC/SC's in the UK SRR which are provided with MF DSC.

State correctly from memory how many MRCC/SC's in the UK will be fitted with VHF DSC, and the target date for this coverage.

11.4 DSC action by ship and shore stations

Aims; *To explore in greatest possible depth the procedure laid down for operation of the DSC system.*

Objectives; By the end of the session the participant will be able to;

Discuss accurately from memory when a UK MRCC/SC should acknowledge a Distress alert from a vessel at sea under varying circumstances;

1. Position is in the UK SRR
2. Position outside the UK SRR
3. No position information is shown on alert

Discuss accurately from memory the subsequent action required of a shore station having acknowledged a DSC distress alert.

State correctly from memory under what circumstances a DSC distress alert would be acknowledged by a ship station.

State correctly from memory under what circumstances a DSC distress relay would be transmitted by a ship station.

State correctly from memory under what circumstances a DSC distress relay would normally be transmitted by a shore station.

Discuss accurately from memory why a distress relay message is not normally transmitted by a shore station.

State correctly from memory what action is required by a shore station receiving a distress relay from another shore station.

State accurately from memory what action is required by a shore station receiving a distress acknowledgement from another shore station.

State accurately from memory what action is required by a shore station in receipt of a distress relay from a ship station.

State correctly from memory under what circumstances a DSC acknowledgement is required from a shore station when dealing with urgency, safety and routine alerts.

11.5 Overview of HF DSC

Aims; *To ensure the participants are aware of the HF DSC system, the areas it applies to and what countries of NW Europe are directly involved.*

Objectives; By the end of the session the participant will be able to;

Discuss accurately from memory the areas of the globe where HF radio can achieve propagation.

State correctly from memory how HF DSC and associated procedure compares to that of MF DSC.

State correctly from memory where HF DSC shore stations are situated in NW Europe.

State correctly from memory the message routing procedure from both the above HF DSC stations to the appropriate MRCC/SC in UK for SAR action.

SECTION 12 Implications of GMDSS for CG

12.1 Information gathering

Aims; *To revisit the subject of information gathering, and examine the implications of GMDSS and other radio equipment in this area.*

Objective; By the end of the session the participant will be able to;

List accurately from memory 9 out of 9 of the means available under GMDSS legislation and previous legislation by which CG can achieve broadcast action.

Discuss accurately, and from memory, in terms of desired audience, the choice communications medium for broadcast action.

Discuss accurately, and from memory, in terms of target area, the choice of communications medium for broadcast action.

List correctly from memory 4 out of 4 potential means of holding a reasonably secure telephone type conversation with the Master of a vessel.

Discuss accurately with the aid of a handout the concept of autolink calls through CRS facilities.

State correctly from memory on which of the INMARSAT standards, telephone connection is available.

State correctly from memory on which of the INMARSAT standards, telex connection is available.

List accurately from memory 3 out of 3 methods of achieving a telephone call to a ship by INMARSAT.

Discuss accurately from memory the procedure which should be followed to achieve a Navtex broadcast in the UK SRR.

12.2 Search planning

Aims; *To examine the implications of GMDSS equipment for day to day decision making in search planning problems.*

Objectives; By the end of the session the participant will be able to;

Discuss accurately from memory the target populations for marketing of 121.5MHz beacons, and state correctly from memory what assistance this may be to an SMC during search planning.

Discuss accurately from memory reasons why no survivors may be in the vicinity of an EPIRB located at sea.

Discuss accurately from memory difficulties which may hinder the deployment of SART beacons by survivors, and why location of the SART will not always succeed in locating all survivors.

Discuss accurately from memory the time lag which may be experienced with EPIRB detection's in the COSPAS/SARSAT system, and state correctly what implication this may have for a valid search plan.

Discuss accurately from memory the implications for initial position error to a position derived from INMARSAT alert messages.

State correctly from memory what guidelines, in terms of time, would be considered when terminating a search for EPIRB and SART beacons.

12.3 Effort allocation

Aims; *To examine the implications of GMDSS equipment on day to day decision making in terms of effort allocation to a search.*

Objectives; By the end of the session the participant will be able to;

Discuss accurately with the aid of a handout, the nominal range of VHF radio signals in 6 out of 6 typical situations.

State correctly from memory, what implications for track spacing are, during a search for either EPIRB's with a 121.5MHz homer, a SART and a target known to have a portable handheld VHF radio.

12.4 Search instructions

Aims; *To revise the concept of complete and unambiguous search instructions and how requirements for contents might change as a result of GMDSS equipment.*

Objectives; By the end of the session the participant will be able to discuss accurately from memory the need to furnish complete and specific instructions in terms of equipment such as SART, and Portable VHF radio.

12.5 Probability of detection

Aims; *To examine the potential effect of GMDSS equipment on choice of track spacing compared with choices relevant to more traditional search targets.*

Objectives; By the end of the session the participant will be able to discuss accurately from memory what the implications for POD are when searching an area for targets such as VHF Radio, 121.5MHz homer, and SART beacons.

12.6 Decoding MMSI's, serial numbers & alert messages

Aims; *To ensure participants have a comprehensive understanding of all identification numbers and message formats relevant to the GMDSS system and know how to decode them.*

Objectives; By the end of the session the participant will be able to;

Demonstrate from memory, correct analysis of distress alert messages related to 406 and 121.5MHz beacons.

Demonstrate from memory, correct analysis of INMARSAT distress alert messages.

Discuss accurately from memory the usage of Serial identification numbers, MMSI and callsign identification for EPIRB's

State correctly from memory what is meant by the term SPOC and where you would find related contact information.

State correctly from memory the format of IMN's in the INMARSAT A,B,C,E, and M standards.

SECTION 13 Practical use of CG comms equipment

Aims; *To ensure participants are familiar with all items of Coastguard communications equipment and understand all the user functions and fault recognition with each.*

Objectives; By the end of the session the participants will be able to;

Demonstrate accurately from memory how to;

- Switch on a Navtex receiver
- Load paper into a Navtex receiver
- Set up a Navtex receiver to respond to any combination of message categories.
- Set up a Navtex receiver to respond to any combination of station transmitters.
- Instigate a self test routine on the Navtex receiver.

Demonstrate accurately from memory how to;

- Carry out a self test of the CCDS system
- How to reset CCDS desk in the event of a freeze condition
- How to carry out a BT private wire line check
- The meaning of various fault messages and where they are displayed
- Selection of particular VHF radio site and channel
- How to monitor a particular VHF radio site and channel
- How to transmit on a particular VHF radio site and channel

Demonstrate accurately from memory how to;

- Switch power on to the Skanti MF/HF transceiver
- Select 2182kHz and the appropriate class of emission
- Select working frequencies and the appropriate class of emission
- Use the volume control
- Use the remote speaker control
- Use the transmitter tune facility
- Use the receiver fine tune facility
- Use the Automatic gain control
- Use the sensitivity feature
- Use the power output selection facility

Demonstrate accurately from memory how to;

- Switch power to the standby VHF radio set
- Select dual watch
- Select a particular frequency
- Use the squelch control

Demonstrate accurately from memory how to;

- Run the DSC software at any workstation
- React appropriately to incoming messages of any kind
- Compose and transmit outgoing messages of any kind
- The standby provisions in case of computer failure

Demonstrate accurately from memory how to;

- Switch power to the IR30 recorder
- Set up the recorder to the correct date and time
- Set up the recorder to an acceptable status to record and store under voice activation.
- Demonstrate how to use the recorder in the playback mode

Describe accurately from memory the midnight communications check routine, including VHF radio checks, DF checks, clocks checks etc.

Describe accurately from memory the correct basic fault reporting procedure for radio equipment, and state accurately from memory to whom the signals are forwarded.

State correctly from memory where to find the correct format for radio fault reporting and the designation of fault priorities.

SECTION 14 Telephone, Fax and RT calls to ships

14.1 Methods of making calls

***Aims;** To increase the awareness of participants to the various means of placing calls, by telephone and Fax from operations rooms to ships, and to offer information on the appropriate charge bands for such calls.*

Objectives; By the end of the session the participant will be able to;

Discuss accurately how to place a telephone, fax and telex call directly from the CG operations room to a ship station by INMARSAT.

Discuss accurately from notes the concept of the link and autolink call, and list correctly from memory the details which will be required by BT when attempting to place a call by such means.

Discuss accurately from memory the advantages and disadvantages of using mobile terrestrial telephones for communications with vessels.

Discuss accurately from memory the potential usage of such telephone, telex and fax calls from CG operations rooms to ships.

14.2 Charge rates for calls

***Aims;** To increase the awareness of Participants in terms of charges levied by BT for various types of shore to ship telephone, telex and fax calls.*

Objectives; By the end of the session the participant will be able to;

Calculate the charge of any call he/she should make, by any means through services offered by BT.

Be able to discuss accurately from memory the relative expense of making calls to ships by each of the different methods.